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ON FERRI SUBCARBONAS.

By T. A. Rex.

(An Inaugural Essay presented to the Philadelphia College of Pharmacy, 1862.)

This is one of the most important of the numerous iron preparations, and its use as a remedial agent is very general. The U. S. Pharmacopœia directs it to be employed in making the *Tinctura Ferri Chloridi*, which is now extensively used in medicine.

That authority orders in preparing this tincture, that 6 oz. of subcarbonate of iron, one pint of muriatic acid, and three pints of alcohol, be taken. The subcarbonate is directed to be dissolved in the acid, and when effervescence has ceased, the action is to be aided with a gentle heat until all the salt is dissolved. The tincture is then completed by filtration and the addition of the alcohol.

As a large proportion of the subcarbonate of iron found in commerce will not dissolve freely when so treated, thus causing the tincture of the shops in many cases to be a very uncertain preparation, the following experiments were instituted to find which mode of conducting the precipitation and drying would render the precipitated powder freely soluble in muriatic acid.

The results of these experiments having been inspected by my preceptor, Mr. Edward Parrish, they are the more freely offered in a thesis.

Experiment 1*st.* A saturated solution of sulphate of iron, containing one part by weight of iron to two parts of cold water, was mixed with a saturated solution of carbonate of soda of the same proportions, both solutions being cold. The resulting precipitate of protocarbonate of iron was thoroughly washed

with warm water, particular care being taken in the washing to remove all the soluble salts. It was then dried between folds of bibulous paper at different temperatures; a portion at the ordinary temperature of 60° F., a second quantity at a sand bath heat of 160° to 175° F., and a third at a boiling water bath heat.

When these different specimens of subcarbonate were thoroughly dried, they were reduced to powder and treated, 45 grs. of each, with 132 grs. of muriatic acid, (which is the proportion for the tincture directed in the U. S. Pharmacopœia,) and gently heated. The acid was found to be of officinal strength, specific gravity 1·16.

All the specimens were soluble to some extent, but differed greatly in their respective degrees of solubility.

The portion dried at the temperature of 60° F. was much the most soluble, next in this respect was that dried at the sand bath heat, while the water bath temperature had rendered the powder still more insoluble.

To determine their proportionate solubilities definitely, tinctures were made by adding to each solution 285 grs. of alcohol, which was found to be the proportion ordered in the Pharmacopœia. These tinctures were thrown upon accurately weighed filters and the insoluble portions carefully washed with alcohol. The filters were then dried, and when weighed with the precipitates the resulting insoluble portions from the quantities used determined to be,

Residue of specimen dried at		60° F.	3·2 grs.
"	"	160° to 175° F.	8·3 grs.
"	"	water bath	9·4 grs.

Experiment 2d. Saturated solutions of sulphate of iron and carbonate of soda, in the same proportion as before, were mixed at a temperature of 150° F. The resulting precipitate, as in the former case, was washed carefully, and dried between folds of paper at the different temperatures of 60° F., sand bath heat of 160° to 175° F., and the water bath heat.

When dried and powdered, the different specimens were treated with muriatic acid in the proportion of 45 grs. of the carbonate to 132 grs. of acid, and exhibited generally a better degree of solubility than in the former instance. The different modes of drying, however, modified the solubilities of the

powder. The portion dried at the lowest temperature being the most soluble.

Tinctures were made of each solution by the addition of 285 grs. of alcohol, as before, and the same mode of procedure resorted to for obtaining the insoluble residues, resulting as follows:

Residue of specimen dried at	60° F.	1·85 grs.
" " "	160° to 175° F.	6·25 grs.
" " "	water bath,	8·9 grs.

Experiment 3d. A dilute solution of sulphate of iron, using 2 oz. to 1 pint of water, was mixed with a solution of carbonate of soda of the same proportion, both solutions being cold.

The same precautions with regard to washing the precipitate were observed, successive portions of warm water being used, until no soluble saline matters could be detected in the washings.

The protocarbonate was subjected to the three different degrees of temperature, 60° F., sand bath 160° to 175° F., and water bath, and when dried and reduced to powder was, as in the former experiments, treated, 45 grs. of each, with 132 grs. of muriatic acid. In comparing the respective solubilities of these portions, it was found, as before, that a high temperature rendered the subcarbonate more insoluble.

When alcohol was added to each solution in the proportion before used, and the insoluble residue obtained as in the previous instances, the weight in grains was found to be—

Residue of specimen dried at	60° F.	1 gr.
" " "	160° to 175° F.	6·65 grs.
" " "	water bath,	8·5 grs.

Experiment 4th. Diluted solutions of sulphate of iron and carbonate of soda, in the proportion of 2 oz. to 1 pint were mixed hot, at the temperature of about 200° F., and the resulting precipitate washed and dried at the three different temperatures before named.

When treated with the same proportion of acid used in the former experiments, this mode of preparation, which accords with the direction of the U. S. Pharmacopœia, was found to furnish a very soluble precipitate; yet as in the other instances a high temperature used in drying it, rendered the subcarbonate less soluble.

To these solutions alcohol was added in the requisite proportion, filtered and washed, and the resulting precipitates or insoluble portions determined as follows:

Residue of specimen dried at	60° F.	1 gr.
" " "	160° to 175° F.	3 grs.
" " "	water bath,	5·7 grs.

To facilitate a comparison of the results of these experiments, a table of the solubilities of the several precipitates is appended, the insoluble residues being deducted from the weight used, and the result calculated into percentages.

SOLUBILITIES OF PRECIPITATES.

	Exp. 1st.	Exp. 2d.	Exp. 3d.	Exp. 4th.
Dried at 60° F.	93 per ct.	96 per ct.	98 per ct.	98 per ct.
" 160° to 175° F.	81 "	86 "	85 "	93 "
" water bath,	79 "	80 "	81 "	87 "

Experiment 5th. As in all the above experiments, the most soluble specimen of subcarbonate, by treatment with muriatic acid, still deposited a small proportion of insoluble matter, another lot of the powder was made. In this the Pharmacopœia directions as to quantity were taken: 2 oz. of sulphate of iron, and 2¼ oz. of carbonate of soda, dissolved each in a pint of boiling water. The solutions were mixed at a temperature of 200° F. The resulting protocarbonate of iron was washed thoroughly in a precipitating vessel, with warm water, the supernatant liquid at each washing being drawn off by means of a syphon, until the washings gave no precipitate with a solution of nitrate of baryta. Washing by decantation was found to be much preferable to washing on a filter.

A portion of this precipitate was wrapped in bibulous paper and dried on a sand bath, the temperature carefully kept at 80° F.; another quantity at the same temperature, but thinly spread on paper uncovered, so as to expose a large surface to the action of the air; and still another portion subjected to a sand bath heat of 180° to 190° F.

When these specimens were thoroughly dried and pulverized, they were found to differ materially in color. The low temperature gave the precipitated carbonate a light chocolate brown shade, and the high heat produced a reddish-brown approaching that of Spanish brown of commerce, both differed materially from the article usually found in the shops.

These were all treated with muriatic acid, 45 grs. of each with 132 grs. of acid, and gently heated. The subcarbonate dried at 80° F. dissolved with much effervescence, and was perfectly soluble, producing a clear solution, without a particle of cloudiness. No difference of solubility or color was observed between the two specimens dried under different circumstances of exposure, at 80° F.

The specimen dried at 180° to 190° F. was as imperfectly soluble in acid, as those dried by sand bath heat in the other instances.

While experimenting with these different modes of preparation, there seemed to be a loss of weight when a high heat was used in the drying. To determine more accurately this loss, 45 grs. of the precipitated (moist) protocarbonate of iron last described, was dried at the temperature of 80° F., and the same quantity of the moist precipitate dried at a sand bath heat of 180° to 190° F. When thoroughly dried, the portion subjected to the gentle heat weighed 15 grs. and the other only 10·5 grs.

This difference of 4·5 grs. may be attributed to loss of water of hydration and carbonic acid, which, when present in the salt, dried at a gentle heat, has a tendency to promote its ready solubility in muriatic acid.

From these various modes of preparing and drying subcarbonate of iron,—it would seem that dilute solutions mixed hot, and the resulting precipitates dried at a temperature not exceeding 80° F., make a salt freely soluble in muriatic acid. A heat higher than this, in every case rendered the subcarbonate less soluble.

From the appearance of the precipitated carbonate of iron generally found in commerce, it is not unlikely that a large proportion of it is made without regard to the officinal directions, and probably dried at high temperatures. Sometimes, no doubt, the soluble salt of iron used contains impurities, which remain in the preparation. With reference to the preparation of *Tinctura Ferri Chloridi* from precipitated carbonate of iron, there seems to be no difficulty if the officinal directions are observed, both in the preparation of the subcarbonate and the tincture. A gentle heat is described in our Pharmacopœia as between 90° and 100° F., and this is the temperature indicated for the drying of the precipitated carbonate of iron.

The London College does not indicate any temperature; the Edinburg and Dublin indicate higher temperatures than are adapted to produce a soluble preparation.

ON PTELEA TRIFOLIATA.

By George M. Snyser.

(An Inaugural Essay presented to the Philada. College of Pharmacy, 1862.)

Ptelea Trifoliata, or, as it is sometimes called, *Swamp Dogwood, Wafer-ash or Hop-tree*, is a shrub from six to eight feet in height, with the leaves trifoliate and marked with pellucid dots. The flowers are polygamous, greenish white, nearly half an inch in diameter, of a disagreeable odor and disposed in terminal corymbose cymes. Fruit, a two-celled samara, nearly an inch in diameter, winged all around, nearly orbicular.

This shrub is "common to this country, growing more abundantly west of the Alleghanies, in shady waste hedges and edges of woods." It flowers in June. The bark of the root of this plant is used to some extent by the "Eclectic Physicians" of the west as a tonic in intermittent and remittent fevers. This plant having been suggested to me as a subject for a thesis, and not finding any account of its having been analyzed, I determined to make some experiments with it.

First, a cold infusion was prepared by percolating six drachms of the powdered leaves with water, until six ounces of liquid had passed. This was of a dark brown color, had a bitter aromatic taste and an odor strongly resembling that of hops. To a portion of this infusion a solution of bi-chloride of mercury was added which produced a dirty white precipitate, and with successive portions of the infusion, sulphuric and muriatic acids each produced a precipitate; the infusion was also coagulated by heat, showing the presence of vegetable albumen.

To a portion of the infusion a few drops of tincture of chloride of iron was added, which produced a black color. To different portions were added nitrate of silver, sulphate of copper, and a solution of gelatin, all of which produced precipitates indicating the presence of tannic acid; the portion which was precipitated by gelatin was filtered, and with the filtered liquid tincture

of chloride of iron produced a greenish black color, which disappeared when the liquid was heated, showing the presence of gallic acid.

Second. An infusion of the fruit was prepared similar to that from the leaves. This infusion had a very bitter taste, and upon treating it as in the former experiments the result was the same.

Third. Two and a half ounces of the powdered fruit was treated with ether to deprive it of fixed oil, dried and treated with alcohol. To the resulting tincture, acetate of lead was added, which threw down a large quantity of coloring matter and some resin, the liquid was filtered and treated by passing sulphuretted hydrogen through it to get rid of the excess of lead, and then again filtered and heated to drive off the excess of sulphuretted hydrogen. To the liquid, yet warm, water was added in drops until it began to produce a precipitate; it was then placed on a sand bath and evaporated to a syrupy consistence; when it had cooled, it was agitated with an equal bulk of chloroform, and when allowed to rest a few minutes it separated into two layers, the watery liquid being on the top; this was decanted, and on evaporation yielded a small quantity of an extract of a very bitter taste. I made repeated attempts to obtain crystals from this extract, but without success. The chloroformic solution when evaporated gave a soft resinous substance of a slightly acrid bitter taste.

Fourth. Three ounces of the powdered fruit was moistened with equal parts of alcohol and water, placed in a percolater and the menstruum of alcohol and water passed through it until it was exhausted. The resulting tincture was evaporated to an extract which was of a dark brown color and a bitter acrid taste. One drachm of this extract was washed with alcohol, which dissolved out a small quantity of a soft resin which was very acrid to the taste. The same part of the extract was washed with ether; this dissolved a portion of it, and on evaporation yielded a brittle resin which was odorless and almost tasteless. The part which remained after being washed with the alcohol and ether, was principally bitter extractive matter and which had none of the acrimony of the extract.

EXPERIMENTS ON THE BARK OF THE ROOT.

First. An infusion, two ounces to a pint of cold water, was prepared. A portion of it was heated to 212°, which produced a coagulum. To another portion a solution of bi-chloride of mercury was added, which threw down a dirty white precipitate. From the result of these experiments I inferred the presence of albumen.

Second. A portion of the infusion was treated with a solution of subacetate of lead, which produced a white flocculent precipitate. A portion of the infusion was deprived of its albumen by heat and filtered, to the filtered liquid an equal bulk of alcohol was added which also produced a white precipitate, showing there was gum present.

Third. A decoction was made by boiling some of the bark in water, it was filtered, and to it was added a few drops of tincture of iodine which gave a dark blue color, showing that starch also existed in the bark. A portion of the decoction was tested for tannic and gallic acids, but there were no indications of either being present.

Fourth. Two ounces of the bark was reduced to coarse powder and macerated in water for twelve hours, it was then introduced into a retort and distilled, which resulted in the production of a small quantity of volatile oil which was found floating on the water which passed into the receiver. The oil was separated by agitating the distilled liquid with ether, decanting the ether and evaporating it. The oil which remained was colorless, had the disagreeable and peculiar odor of the bark, and a hot, nauseous, disagreeable and very persistent taste.

Fifth. The dregs which remained in the retort after distillation were exhausted with alcohol; this gave a bright yellow tincture, which on evaporation yielded a fixed oil, extractive matter and resin. The oil soon separated from the extractive matter, it was decanted and it was of a light brownish color, of a mild, bland taste, and burned with a bright flame, giving off very little smoke. The extract was allowed to stand for several days, and on examination a number of crystals were observed on its surface and around the edge of the vessel. They were of a cooling, saline taste, soluble in water, and bi-chloride of platinum

gave a yellow precipitate when it was added to the solution, showing the presence of potassa. I presume they were crystals of nitrate potassa.

Sixth. To avoid the extractive matter two ounces of the bark was exhausted with ether, the ethereal solution was evaporated, the fixed oil which separated was decanted, and the ethereal extract washed with alcohol. The alcoholic solution on evaporation yielded a resin of a reddish brown color and beautifully transparent. The taste was disagreeable and very acrid at first, but after a short time producing a numbing sensation which lasted for a long time. The part of the ethereal extract which was not dissolved by the alcohol was also of a resinous nature, but was almost tasteless, and had none of the acrimony of the alcoholic resin. I made repeated attempts to obtain crystals from the alcoholic resin but was unsuccessful. From the result of these experiments I concluded that the bark contains vegetable albumen, gum, starch, volatile oil, fixed oil, extractive matter, a resinous substance soluble in ether, and a resin soluble in alcohol and ether, and upon which, in connection with the volatile oil, the bark depends for its activity.

ON MONSEL'S SALT.

By H. T. Peck.

(An Inaugural Essay presented to the Philadelphia College of Pharmacy, 1862)

Monsel's salt is at present quite prominent among the new pharmaceutical preparations that have been introduced within the last few years. Its value in the cases for which it has been recommended seems to be well determined, and the demand for it has become considerable.

As seen in the market it presents variable appearances. Some specimens being in the anhydrous condition of a greenish yellow color, and in the form of powder or small granular masses, and others in the form of scales, reddish brown in color, containing some water—water of crystallization, if I may so call it. I have also noticed the presence of nitric oxide in several specimens.

The salt in scales dissolves readily, and forms a clear solution. The other kinds dissolve slowly and imperfectly, yielding turbid

solutions, from which there is deposited, sometimes, a considerable portion undissolved.

It is desirable that the preparation should be uniform in character, so that the purchaser or prescriber in ordering it could be certain to get a pure and soluble article, instead of an imperfect and insoluble one, such as is generally furnished at the present time.

In order to ascertain if the salt in its most perfect and soluble condition could easily be made, and what particulars had to be observed to obtain that result, I made a few experiments.

The formula I used is that given as M. Monsel's, by Prof. Procter, in the American Journal of Pharmacy, (vol. xxxi. p. 403.) It is essentially as follows:

Take of	Distilled water	100 grammes
	Sulphuric acid (60°B.)	10 "
	Protosulphate of iron	100 "
	Nitric acid (35°B.)	16 "

Mix the sulphuric acid and water in a pint porcelain capsule and heat to ebullition; dissolve in it 50 grammes of the protosulphate of iron; add the nitric acid in small portions, and when the evolution of the nitric oxide has ceased, add in portions of the remaining protosulphate of iron previously powdered. Boiling should be continued during the operation. Lastly, add sufficient distilled water to make the solution measure 100 fluid grammes, and filter.

In the first experiments made, the heat applied during the oxidizement of the protosulphate of iron was moderate. It was so applied as to not volatilize the nitric acid before it could be decomposed. This manner of operating, however, did not secure the perfect result I expected. The solutions in a few days gave off nitric oxide, and the salt in scales prepared from them, though fine in appearance at first, became, in the course of a week, opaque, and gave evidence of the presence of nitric oxide.

In several final experiments, I maintained the heat so that the solution was kept generally boiling during the process, and afterward as long as any nitric odor was perceptible. The nitric acid when added to the boiling solution was quickly decomposed; none, I believe, escaped unchanged. The evolution of nitric

oxide was quite violent, but by dropping in the acid was controlled. The great advantage in maintaining the temperature of ebullition is, that the nitric oxide is evolved as soon as it is formed, and not allowed to become dissolved in the solution from which it is afterwards quite difficult to be thoroughly separated. A few minutes boiling at the end of the process was sufficient to render free from odor the solutions made at the boiling temperature; while those prepared with more moderate heat had to be boiled nearly half an hour before they were brought to the same condition.

The solutions last obtained, as well as scales prepared from them, have been kept more than a month, and as yet no changes have occurred in them. The solutions are clear and odorless as at first, and the scales remain transparent.

The scales were obtained by evaporating the solution to the consistence of honey, spreading it thinly, by means of a camel's hair pencil, on glass plates, exposing these over a stove to a heat of 180° for half an hour, or until the point of a knife pressed upon the salt showed it to be brittle, by causing a fracture. Then, while the plates were warm, pressing a knife edge upon the salt in lines about the eighth of an inch apart. Separated in this way, the scales were about as large as those of citrate of iron usually are. They were deliquescent, but not so much so as I expected to find them. I think they are exceeded in that respect by acetate of potassa.

Care should be taken to bottle them immediately after separating from the plates, as they are very adhesive and troublesome to manage after they have deliquesced. When exposed to a heat of about 300°, 100 grains lost 22 grains of water; 78 grains of the anhydrous salt being left.

In a dispensing establishment, it is advantageous to have a definite solution of the salt on hand, so that when a solution is prescribed, the concentrated one can be properly diluted, instead of dissolving the salt in scales or that in the anhydrous form; the former being more valuable on account of the time and trouble necessary to its preparation; the latter being so slowly soluble.

To obtain such a solution, that resulting from the process before given may be taken. By calculation it is found to con-

tain 497 grains of the anhydrous salt, or 637 grains of a salt containing twenty-two per cent of water. Now if it be made to measure 26 fluid drachms, instead of 100 fluid grammes, each fluid drachm will contain about 24 grains of the hydrated salt, or 19 grains of the anhydrous.

In making Monsel's salt, care should be taken to ascertain the strength of the acids used; as an excess would render the preparation caustic, or give a result different from the one intended, in which there is less acid than the base is capable of combining with.

In my own case, an ordinary vial, capable of holding 1000 grains of distillate at 60° when filled to the neck, served the purpose of showing the specific gravity, and consequently the strength of the acids at my command.

FERRATED ELIXIR OF BARK.

By James T. Shinn.

Among the pharmaceutical novelties recently brought to the notice of physicians, this preparation of Iron, Cinchona and Brandy, is one of the most agreeable and consequently may prove very popular with patients.

Where an after-dinner stomachic and excitant is required with the tonic effect of small doses of Cinchona and Iron, this Ferrated Elixir of Bark will answer admirably, one objection to its use, however, being the danger of engendering a taste for spirituous liquors.

Not being aware of the publication of any formula for making it, the following is offered as having given satisfaction.

Take of Calisaya Bark in powder No. 60,	four ounces,
Cinnamon water,	two pints.
Caraway water,	one pint.
Tincture of Fresh Orange Peel,	half-a pint.
Alcohol	half-a pint.
Brandy,	two pints.
Syrup,	three pints.
Pyrophosphate of Iron, (with Citrate of Ammonia) in scales,	two ounces.

Mix the caraway and cinnamon water with the tincture of

orange peel, and percolate the bark with the mixture. Dissolve the pyrophosphate of iron in the percolate, add the alcohol, brandy and syrup, and filter if necessary.

The formula for the Elixir of Bark is based upon one by A. B. Taylor, published in the Journal of 1859. When made in that manner, however, a precipitate occurs in a short time, rendering it turbid and unsightly. By treating the bark with an aqueous menstruum, and afterwards adding enough alcohol and brandy to preserve it, less of the cinchonic red is taken up, and the preparation remains clear much longer, though my experience is not yet sufficient to say that no deposit will eventually take place.

The Tincture of Orange peel is made by macerating the finely divided fresh rind in deodorized alcohol, using a pound to the quart; it is a delicious flavorant and keeps well, some now a year old being as good as at first. The object of mixing it with the aromatic waters is to remove the resulting cloudiness by percolation, and if the tincture is not on hand it would probably be preferable to rub the fresh rind with the sugar for the syrup, thereby furnishing a purely aqueous menstruum in greater quantity.

The pyrophosphate is the most suitable of all the salts of iron for prescribing with preparations of Peruvian bark, on account of its not blackening with the tannin of cinchona and its freedom from chalybeate taste. A very convenient form in which to keep it is the solution of Dr. Squibb, as given in the Journal of 1860, page 37, with the addition of a few drops of oil of cinnamon or cloves, to prevent moulding. With this the Syrup or Ferrated Elixir may be made easily and quickly.

Some of the imported article in scales became, after a time, quite insoluble in water, and required the addition of ammonia for its ready solution. Although not darkened by infusion of cinchona, the color deepens considerably on the addition of brandy, which contains tannin, derived from the cask.

The Ferrated Elixir of Bark, prepared as above, contains about one grain of pyrophosphate of iron and citrate of ammonia, and two grains of cinchona bark in a fluidrachm, and is very agreeable in taste and appearance. The proportion of iron may be increased without rendering it unpleasant.

SYRUPUS STILLINGIÆ COMPOSITUS.

By Joseph A. Heintzelman.

For some time back I have received prescriptions for an Eclectic preparation, a compound syrup of stillingia, which, being unofficinal, I obtained of several Eclectic druggists of the city. But of late the call has been so frequent that I now prepare the syrup by the gallon.

I first examined the recipe described in King's Dispensatory, and have found it to yield a very valuable preparation when the manipulation is rightly conducted.

Most of the ingredients of this syrup are from our own fields, growing in different localities of the United States, and physicians should be encouraged to prescribe medicines from sources near home instead of foreign substances. As it is likely to become a popular medicine, and the formula published not being without objections, I take the opportunity of offering the result of a satisfactory experiment. In examining King's Eclectic Dispensatory, I found the manipulation tedious and not strictly scientific; the measure of menstruum used is larger and more costly than necessary, and what has been gained by extraction, is lost by evaporation and superfluous boiling. Of course, if the strength of such a preparation should be estimated by its *color*, it may be called a good preparation, as it is a dark brown almost black syrup, depositing, after a time, much sugar in crystals owing to the large amount of alcohol retained, and containing little of the fine flavor, depending on the very volatile matter, which, at careful evaporation, is preserved, but entirely destroyed by long continuation of boiling.

Take of Queen's root, (Stillingia sylvatica,)
Turkey-corn root, (Cordyalis formosa,) each ℥vi.
Blue flag root, (Iris versicolor.)
Elder flowers, (Sambucus,)
Pipsissewa leaves, (Chimaphila,) each ℥iij.
Coriander seed,
Prickley ash berries, (Xanthoxylum fraxineum,) each ℥iss.
White sugar, seven pounds, avoirdupois.
Alcohol,
Water, each, a sufficient quantity,

Bruise and grind the ingredients to get the coarse powder through a sieve of 18 meshes; mix 3 pints of alcohol with 3 pints of water, and dampen the powder with 1½ pints of this mixture; put into a conical percolator and set aside 24 hours to macerate. Displace after expiration of that time with remaining portion of said menstruum; when it has disappeared from the surface of the mass pour on another mixture of 1 pint of alcohol and 2 pints of water and displace again. The 2 pints of water which I use as a third menstruum is to displace a portion of the remaining diluted alcohol in the mass, after which time all the active matter is taken up. Evaporate the saturated tincture on a water bath and at a temperature not exceeding 112° F. to 4 pints. Filter while hot, and if it measures less than 4 pints, add enough distilled water. Finally dissolve in the filtered liquid 7 lbs. avoirdupois white and *best* sugar; bring to syrup by boiling, skim off the coagulated substances and strain.*

This syrup is based on different principles from that prepared according to King's Dispensatory, is permanent, answering for all seasons of the year, less expensive to the manufacturer and buyer, of a clear and rich color, peculiar but pleasant taste and odor, reminding very distinctly of the substances employed before their extraction, and speaks for itself that the virtues are taken from and retained in by the above manipulation. The syrup is recommended and used extensively as an effective alterative in syphilitic, scrofulous and glandular diseases. The dose is a teaspoonful, to be taken three or four times a day; it is

* The author, in our opinion, has hardly done justice to the formula in King's Dispensatory. That formula is based on the fact that at least two of the ingredients owe their virtues to oleoresins. Hence the mixed powder is percolated with a strong alcohol, (76 per cent.,) till a pint is obtained, which removes the greater part of these constituents, and is reserved to the last. The ingredients yet containing alcohol are afterwards exhausted by water, and a syrup made from this solution (after distilling off any alcohol it may retain) with 6 pounds of sugar, so as to reduce it to 7 pints. To this, when nearly cold, the pint of reserved tincture is added and mixed to obtain a gallon of syrup. The turbid character of the syrup thus made is owing to the oleoresinous ingredients, which are deemed valuable, and can only be retained by submitting to this partial solution.—*Ed. Amer. Journ. Pharm.*

also prescribed combined with iodide of potassium in the proportion of 15 grains to 1 fluidounce of syrup, a teaspoonful of it taken three times a day.

NOTE.—If the ingredients for this syrup could be had in powder of at least 40 meshes to the linear inch, the amount of menstruum could be considerably reduced, and the syrup made at less expense. The practical suggestions of Professor Procter in his Essay on Fluid Extracts should be studied by every druggist. The "Swift" mill or similar mills, which *must* at present answer for pharmaceutical purposes on a small scale, and where mortar and pestle prove fruitless, are not the *practical* mills we now need. I have never been able to grind certain roots, barks, herbs, &c., to finer powder than will go through a sieve No. 18 or 20; and even then only with a great deal of labor and loss of time. To break up drugs of hard or tenacious fibres it will answer well enough, but to grind to a fine powder to go through a sieve of No. 40 or 60, we want certainly an improvement. Not long since I spoke on that subject to Mr. N. Spencer Thomas, who has planned out a mill similar to his large one, and says that the pattern has been of considerable expense to him, but he will get up a mill suitable for powdering small quantities, if he can only find a sale for it. A mill of that kind is as useful as a mortar, and will repay the cost in a short time by the saving of time and materials now idly spent.

Philadelphia, April 5th, 1862.

PHARMACEUTICAL NOTICES.

By W. PROCTER, JR.

Tinctura Ignatiæ Composita—Bitter drops, (*Gouttes Amères*).—Several physicians of this city having prescribed this preparation, and some apothecaries being unacquainted with the formula, Mr. Hubbell, who has introduced it into use, informs us that it is made by the following recipe to be found in "Dorvault's Officine," page 337, of which a translation is here given:

"*Bitter drops.*

Take of spirit of wormwood,	. .	1000 parts.
" Beans of St. Ignatius,	. .	500 "
" Solution of carbonate of potassa,		15 "
" Pure soot,	. . .	5 "

Digest these ingredients during fifteen days and filter.

This formula is taken from that of Baumé. Dose 1 to 8 drops in a bitter infusion, for flatulent colics."

The spirit of wormwood is directed by the same authority to be made by distilling together 1000 parts of leaves and tops of wormwood, 1000 parts of infusion of wormwood, and 3000 parts of alcohol, 80 per cent., until 2500 parts of distillate is obtained.

The preparation, as made by Mr. Hubbell, is a light brown tincture; hence, if the alcoholic extract of wormwood and alcohol is substituted for the spirit, as has been directed by one physician, a different preparation is obtained. A much nearer approach would be to use a spirit of wormwood made by dissolving good oil of wormwood in alcohol in the proportion of 20 drops to the fluidounce of alcohol.

Extractum Krameriæ, U. S. P.—Having recently had occasion to prepare a small lot of this extract, it was deemed best to use the root in fine powder in a conical glass percolator. The powder was prepared by one of the best reputed powderers, and was moistened with eight fluidounces for each pound of the powder, and packed firmly on a diaphragm of lint first, and then sand. The first five pints of percolate were reserved and evaporated very carefully. The remainder, which amounted to several gallons was concentrated by itself, each till of a thick honey-like consistence, when they were mixed and reduced to a nearly dry extract. The heat employed was below 150°, and generally below 120°, and the product obtained 10¾ ounces or 9·14 per cent.

This result corroborates one made several years ago, and sustains the belief that the Peruvian Krameria of latter years does not yield as much aqueous extract as that found in our market twenty or thirty years ago. The proportion of wood is much greater, and of cortical matter less than was then common, and it is quite unusual now to find pieces comparatively straight, that were, when fresh, evidently quite succulent, with a thick cortical portion.

Emplastrum Ammoniaci, U. S. P.—This preparation is a sort of acetic extract of ammoniac. It should be prepared without contact with iron, either in the form of spatula or evaporating vessel, if the operator would avoid the strong colorizing

influence of acetate of iron. In a recent operation with ten pounds of ammoniac of good quality, in tears, the drug was coarsely bruised, put in a two-and-a-half gallon porcelain dish, and mixed with a gallon of diluted acetic acid. The vessel was put in a warm place, where it acquired a temperature of 140° F., and stirred with a wooden spatula from time to time until the particles became well softened, and the whole of a thick creamy consistence. It was then strained through a coarse textured muslin, such as is called "foundation muslin" by the bonnet makers. This requires to be done by hand, about a quart at a time, and is a disagreeable piece of manipulation. After the first expression, the residue is returned to the dish, again digested with six pints of diluted acetate acid until the gum resinous portion is all softened, when it also is forced through the strainer, which retains the particles of capsules and other impurities of the drug. The thick liquid is now evaporated with frequent stirring until reduced to the consistence of a firm extract, when, whilst yet soft, it should be put into suitable jars. Ten pounds of the best ammoniac yield eleven pounds of the plaster.

Emplastrum Opii, U. S. P.—Having occasion to prepare ten pounds of this plaster it was determined to adopt somewhat the plan proposed for the Pharmacopœia of 1860, yet not entirely the same. The quantity of plaster to be made was ten pounds avoirdupois. The ingredients employed were as follows:—

Take of Opium in mass, a quantity equivalent to 20 oz. of the powder.
Burgundy pitch, 30 ounces,
Lead plaster, 120 ounces,
Water and alcohol of each a sufficient quantity.

Having dried one hundred grains of the crude opium and ascertained its loss of weight, weigh out the quantity of opium equivalent to 20 ounces dry, cut it in pieces, and macerate it in two pints of water for 24 hours. Then express the liquid in a cloth strainer, and again macerate in two pints of water for 12 hours, and again express; mix the solutions and allow them to evaporate at a moderate heat. To the dregs of the opium add sufficient alcohol to make a semifluid mass, (about half its weight,) put it in a funnel with a sand diaphragm, and pour on diluted

alcohol until the liquid passes with little color or odor. Evaporate this tincture to a syrupy consistence, add it to the other liquid, and when the mixed extract has acquired the consistence of thick honey whilst hot, add it to the plaster and Burgundy pitch previously melted together in a suitable vessel, and stir them until a portion, on cooling, has the proper consistence.

This plaster is apt to be a little too soft at first, owing, apparently, to the absence of the insoluble portion of the opium, but it soon attains the proper consistence if the lead plaster used has been free from undecomposed oil which appears to keep the plaster too soft. The use of such lead plaster and that which contains glycerin should be avoided in making this plaster.

GROUND FLAXSEED.

By Charles V. Hagner.

There are wrong impressions prevailing among some apothecaries on the subject of "Ground Flaxseed." Long experience has convinced me that the perfection of grinding flaxseed is to grind it *dry*, that is, without "raising" the oil, which can only be done on a pair of horizontal mill-stones, sharp and "dressed" for that especial purpose. This process is a cutting (if I may so term it) of the seed into particles, the stones never coming into contact; if they did, it would be a "rubbing" process, mashing a small portion of the seed, at the same time squeezing out the oil, which would so grease the remainder and the surface of the stones as to make any further grinding of it impracticable. I suppose the same thing would occur if you put flaxseed into a mortar and rubbed it, you would mash a portion of it, "raise" the oil, and so grease the remainder and the pestle and mortar that all rubbing would be in vain.

The common and most expeditious way of grinding flaxseed is by means of iron rollers; this is the method pursued in the oil mills, where "raising" the oil is no detriment. This is a mashing and rubbing process, one roller being larger in diameter, or running at a greater speed than the other; this process "raises" the oil and gives the article a greasy appearance. It is a mistake to suppose that this is an evidence of its purity, or, because of its being dry, that it is adulterated or the oil taken

from it; ground in a certain way it could easily be adulterated, one-half the oil in the other half being abundantly sufficient to give the whole an oily appearance. On the other hand, if you put some, ground dry, in a warm mortar and rub it, you will soon "raise" the oil and find it there.

By grinding the article dry it can be ground much finer, and, if necessary, sifted through a tolerable fine sieve, rejecting the chaff or hull of the seed, and it will keep much longer and better; when the oil is "raised" it will heat, mould and become spoiled, especially in warm weather.

The same difficulty of "raising" the oil occurs in grinding mustard seed, to prevent which is a nice and delicate operation; many who attempt it fail, lose one-half the article, sometimes more, and the portion they succeed in grinding is of a coarse and oily nature; after the oil is once raised it is in vain to attempt any further grinding or sifting of it.

ON THE DETECTION OF STRYCHNIA AS A POISON, AND ON THE INFLUENCE OF MORPHIA IN DISGUISING THE USUAL COLOR-TEST.

By John J. Reese, M. D., of Philadelphia.

[Note.—This interesting paper, originally published in the American Journal of the Medical Sciences for October, 1861, is too long for insertion in this Journal, yet the importance of the subject as presented by the author, (see page 225), relating to morphia, together with the fact that Professor Thomas has re-investigated the influence of morphia in modifying the color-test of strychnia, leads us to attempt an abridgement of the more important parts of the paper of Dr. Reese. It would have been interesting if Dr. Reese had sought, more elaborately, for morphia in the cases where his results refused to respond to the test for strychnia. The point of Dr. Thomas' essay seems to be the neat manner in which, by the use of appropriate solvents, he isolates the strychnia from the morphia, and thus avoids its interference in applying the test. The well-known precision of Dr. Reese precludes the idea of his being mistaken, and hence we must attribute the failure to isolate and detect the strychnia in experiment 3d, either to the actual interference of morphia, to some peculiarity of the process of Staas' in its relation to morphia, or to some other overlooked interference.—Ed. Amer. Jour. Pharm.]

The progressive increase in the number of deaths within the last few years, occasioned by strychnia, used either for homici-

dal or suicidal purposes, is a subject demanding the careful consideration both of the toxicologist and the medical jurist; and every circumstance connected with the detection of this most potent agent cannot fail to interest the medical profession at large.

The author lately had occasion to investigate this subject closely in connection with a case of alleged poisoning by strychnia. A man was indicted at the April term, 1860, for the murder of his wife, in Perry County, Pa. Although dying under suspicious circumstances, no post-mortem examination was made until six weeks had elapsed, when the body was exhumed. The stomach and a portion of the small intestine were carefully tied, and along with the adhering pancreas were conveyed to Philadelphia, and placed in possession of Dr. Reese for chemical examination. He found the organic structure but little changed in appearance (eight weeks after death) and the contents of the vessels consisted of four or five fluidounces of a thick brownish homogeneous fluid.

Three separate analyses were made. The contents of the stomach—contents of the intestine—and the tissues themselves; each of which was carefully repeated; yet he "entirely failed to detect any evidence of the presence of strychnia, either by the bitter taste of the final extract, or by the very delicate *color-test* employed."

Inasmuch as the *moral* circumstances of the case, and the symptoms, pointed to death by strychnia, the author naturally sought for an adequate cause to explain the failure to detect the poison. After giving due weight to the effects of elimination by the excretions during six hours that the patient survived, and to the agency of decomposing action during six weeks inhumation, the author remarks on a circumstance in connection with the case which he viewed with especial interest, namely: "the fact that the woman had taken, just before death, by the advice of her medical attendant, *a quarter of a grain of morphia*, with a little ipecacuanha; but she did not vomit. Now the value of this fact is just this: It has been ascertained that the presence of morphia and other substances has the effect of disguising and entirely neutralizing the usual *color-test* used for detecting strychnia; so that the latter might be undoubtedly present, yet if

morphia were also present at the same time, the strychnia could not be discovered. It will be readily admitted that this is a point of the extremest importance to be settled by the chemist, in medico-legal researches. It is one to which no very especial attention has hitherto been given. It is merely mentioned as a casual fact in the various works on toxicology, but the only actual experiments recorded, to my knowledge, are those published by Dr. T. G. Wormley, in the Ohio Medical and Surgical Journal, September, 1859, in which it is stated that when the morphia exceeds the strychnia in quantity, the possibility of discovering the latter by the color-test diminishes." Dr. Reese accordingly undertook a series of experiments to satisfy himself in regard to this very important subject with the following results:

"*Experiment* 1.—One-tenth of a grain of pure strychnia was added to about twelve ounces of water, into which were put several ounces of fresh beef, finely cut up, together with some starch, a little common salt, and a few drops of acetic acid; (the object being to represent, as closely as possible, the contents of a human stomach after a meal.) The whole was digested on a sand-bath for twelve hours at a moderate heat. It was then strained, pressed and filtered; and afterwards evaporated down to a very small bulk. It was next divided into two separate portions, each of which, of course, would contain the 1-20th of a grain of strychnia. One of these portions was treated after the process known as Graham and Hoffman's (the alkaloid being removed by animal charcoal, and finally extracted by ether.) Here, a drop or two of the ethereal solution, representing about the 1-40,000th to the 1-50,000th of a grain, gave distinct evidence of strychnia by the usual color-test. The second portion of the evaporated solution was divided into two parts, each of which would of course contain the 1-40th of a grain of the alkaloid. The first of these was treated according to the process of M. Staas, in which ether is used as the ultimate solvent: and the second part after the process of Mr. Prollius, in which the ultimate solvent was chloroform. In both instances I obtained the most satisfactory proofs of the presence of strychnia; operating upon a single drop of the fluids—which would represent, certainly, not over the 1-100,000th of a grain of strychnia.

"*Expt.* 2. This was a repetition of the former experiment, except that the quantity of strychnia used was much smaller—only the 1-100th of a grain. After treatment by Staas' process, and on concentrating the ultimate ethereal solution, the presence of strychnia was manifested both by the color-test, and by the bitter taste of the extract. Here, the quantity of the poison operated upon was less than the 1-100,000th of a grain.

"*Expt.* 3. This was an exact repetition of Expt. 2, except that to the 1-100th of a grain of strychnia, three times that quantity of morphia (1-33d of a grain) was added. On treating this by Staas' process, as in the preceding cases, I could not discover the slightest trace of either strychnia or morphia, even after the ultimate ethereal solution was concentrated to a very small bulk by evaporation."

As the first two experiments were precise counterparts of those employed in the analysis of the stomach, the author feels justified in believing them to be delicate and reliable, and that the poison should have been isolated if present, unless its presence was masked. The *third*, he thinks, seems to prove most unequivocally that morphia, when present in excess along with strychnia, has this property of concealing the latter from the usual color-test.

"*Expt.* 4. This was also a repetition of Expt. 2, except that to the 1-100th grain of strychnia, the 1-50th grain of morphia was added instead of the 1-33d —or double instead of treble the quantity. Here, likewise, there was a total failure to discover the poison.

"*Expt.* 5. This was a repetition of the last, except that only 1-100th grain of morphia was added to the 1-100th grain of strychnia, or an equal portion. The result here was that I obtained the faintest possible evidence of the presence of strychnia, and only after repeated trials.

From these last experiments I think we may conclude that *the influence of Morphia in preventing the detection of minute quantities of strychnia, in the presence of an organic fluid, depends upon the relative quantity of the two alkaloids;—the strychnia being not discoverable when the morphia is in excess, and barely discoverable when in equal quantity.*"

Dr. Reese next instituted a set of experiments with a view of ascertaining the effect of morphia in disguising the presence of strychnia *in perfectly pure solutions*, free from organic mixtures, and the result pointed to the fact that the minuteness of the proportions detectible by the color-test was inversely as the proportion of morphia was increased, as will be shown in the following tabular view:

When the proportion of the two alkaloids was

One	strychnia	to one	morphia	he was able to detect			1-500,000th	of a	gr.
One	"	to two	"	"	"	"	1-300,000	"	"
One	"	to three	"	"	"	"	1-150,000	"	"
One	"	to four	"	"	"	"	1-100,000	"	"
One	"	to five	"	"	"	"	1-80,000	"	"
One	"	to ten	"	"	"	"	1-10,000	"	"
One	"	to twenty	"	"	"	"	1-5000	"	"

Beyond this the experiment was not pursued, Dr. Reese being satisfied that Wormley's observation, that the action of strychnia became more difficult as the proportion of morphia increased, was correct.

But an important point to be determined was, how a quantity of strychnia, almost infinitesimal, might be effected by an amount of morphia, which, though small in itself, yet bore a relatively large proportion to the strychnia: just precisely such a state of things as would be likely to be met with in an analysis of the human stomach, and to decide this Dr. Reese tried the following experiments on three half-grown cats:

"Half a grain of pure strychnia was given to the first animal, and in eleven minutes it died in a violent convulsion. The poison was very easily discovered in its stomach, by the usual tests, on the following day. To the second animal a quarter of a grain of strychnia and the same quantity of morphia were given; and, somewhat to my surprise, the animal was deeply convulsed in six minutes, and died very quickly. Here the morphia, so far from counteracting the toxic influence of strychnia (as might have been inferred from its opposite physiological influence,) seemed actually to have increased its effects. The stomach of the second animal was likewise examined, but I obtained scarcely recognizable evidence of strychnia, owing doubtless to the influence of the presence of the associated morphia. It will be recollected that the quantity of morphia in this case was just equal to that of the strychnia. To the third animal, the 1-20th of a grain of strychnia, and the 1-10th of a grain of morphia (double the quantity) were administered. Convulsions took place in about fifteen minutes, and death in half an hour. The stomach was examined by Staas' process, as in the other cases, but with a total failure to detect the poison by the color-test; although the bitterness of the extract, and its decided action in producing tetanic convulsions in a number of frogs, clearly established its presence."

From all the foregoing experiments, it appears to be conclusively established, that morphia does unquestionably possess the power, when present in excess, of completely disguising the color-test of strychnia; and this is emphatically the case when they are associated in organic mixtures, as in the contents of the stomach. Consequently this fact should always be taken into account in medico-legal investigations.

The moral evidence in the foregoing case was very strong, and although Dr. Reese's evidence entirely failed to establish

the presence of strychnia, yet his evidence of the masking effect of morphia, taken in connection with the fact of the patient having taken morphia just before death, and the strong moral evidence, caused the conviction of the accused, who subsequently made a full confession of the crime.

The remainder of Dr. Reese's paper is occupied with a detailed explanation of the best modes of applying the color-test, with the value of bitterness as a collateral test, with the physiological or frog test of Dr. Marshall Hall, and with the microscopy of strychnia, but the space at command is too small to insert it here; and the reader desirous of pursuing the subject, is referred to the original paper before noted, and to two papers in this Journal published in November, 1861.

ON A SAFETY LAMP FOR LABORATORY USE.

By C. M. Warren.

The danger attending the distillation of highly inflammable liquids, in glass retorts, over an open flame,—and other manipulations of similar nature,—as commonly practised in laboratories, has probably been felt by every one who has made such experiments. By the exercise of due precaution, the chances for accident under such circumstances may, doubtless, be greatly reduced; yet the consequences which may result from a single mishap, are liable to be so serious (as the fate of the lamented Mansfield gives painful evidence, although, I believe, he was using a metallic retort at the time of the fatal occurrence,) that it seemed to me desirable to devise means by which such experiments may be conducted with safety; especially as the chemist has so frequently to resort to protracted fractional distillation of complex mixtures of inflammable substances, as his only means by which to effect a separation.

I find that a lamp may be constructed on the principle of Davy's safety-lamp for miners, so as to afford the important desideratum of safety, and at the same time combine utility and convenience for general use, in cases where a broad open flame and a diffused heat are desirable. Simple modes of applying the principle will readily suggest themselves.

It is only requisite that the flame should be properly enclosed,

and so placed and adjusted in relation to other parts of the lamp, that no part can become excessively heated, and yet so as to afford sufficient heat for any work of the kind that may be presented,—the openings below and above for the supply of air and escape of the products of combustion, being securely covered with fine wire gauze, of about 2500 meshes to the square inch. With certain slight alterations, the lamp figured under "Gaskochlampen" in J. F. Lume & Co.'s, Berlin, catalogue of chemical apparatus—a medium size of which is represented in the annexed figure—makes a cheap and convenient lamp of this kind. As they may not be on sale in this country, a partial description, for the convenience of those who may desire to have them made, may not be amiss.

The sides are of a single piece of sheet iron, riveted together where the ends meet; the upper and lower edges are bent respectively upward and downward so as to stand in a good position to receive the moveable brass rings, *a a*, which serve to hold firmly the wire gauze with which the top and the bottom of the lamp are covered.

As the wire gauze will occasionally require to be renewed, this simple mode of construction seems a very convenient one, as the moveable rings may readily be taken off and replaced whenever new gauze is needed.

The tubulure, *b*,—which may be closed with a cork—serves for the introduction of a match for lighting. The nipple, *c*, communicates in the interior with a ring, 2½ inches in diameter, made of copper tube, and placed in the centre of the lamp, 3½ inches below the upper gauze, and provided with small perforations in the upper side, for the escape of the gas. The height of the lamp, between the upper and lower sheets of gauze, is 5½ inches; its width across the top 4 inches, and across the bottom 6 inches.

The only alterations which I have made, consist in the addition of the tubulure, *b*, and the wire gauze across the bottom.

It is obvious that they do not at all interfere with the use of the lamp as originally intended. It may still be ignited outside the gauze, so as to give a broad, open, blue flame. When used as a safety-lamp, it is, of course, to be lighted inside, and furnishes a circuit of small luminous flames, but which afford sufficient heat for any purpose for which a safety-lamp is conceived to be desirable.

To show the confidence which one may repose in the safety of such a lamp, I may add that I have repeatedly tested one by heating a fatty oil to ebullition—during which the gauze immediately under the retort would acquire a dull red heat—and then pouring boiling ether upon the different parts of the lamp, without, in a single instance, being able to ignite it outside the gauze. A portion of the ether would fall through and burn in the interior, while some would lie in the spheroidal state upon the gauze itself, until evaporated: showing, that, if one were distilling such a substance, even with such an excessive heat in the lamp, the retort might break, and its contents fall through upon the lamp without any kind of danger. A similar safety-lamp could easily be constructed for using alcohol instead of gas. —*Amer. Jour. Science and Arts, March*, 1862.

DESCRIPTION OF A NEW FUSIBLE ALLOY.

By B. Wood, M. D.

In this Journal for Sept., 1860, will be found a notice of the cadmium alloy discovered by me, consisting of from one to two parts of cadmium, two parts of tin, four parts of lead, and from seven to eight parts of bismuth, and so exceedingly fusible as to melt below the temperature of 160° Fahr. A brief description of another alloy similar in character and scarcely less remarkable, is herewith submitted. It consists of,

Cadmium 1 part, lead 6 parts, bismuth 7 parts.

This alloy melts at about 180° Fahr., being nearly midway between the melting point of the old fusible metal consisting of the *three* metals, tin, lead, and bismuth, and that of the alloy first mentioned, consisting of the *four* metals, cadmium, tin, lead, and bismuth. It is remarkable as exhibiting the liquidifying

property of cadmium in certain combinations; also, in the fact, that while the mean melting point of the constituents composing it is much higher than that of those composing the old fusible metals, it melts at a much lower temperature,—being more fusible than any other *alloy* yet known consisting of but *three* metals.

It has a clear, brilliant metallic lustre that does not readily tarnish. Its color is a bright bluish grey, resembling platinum: when cast, its free surface presents a white, frosted appearance. It is very flexible in thin plates, and breaks with a hackly fracture; but when thicker bars are broken, the fracture is smooth, resembling that of tempered steel. It is malleable, but not perfectly so. In hardness it is about the same as bismuth, and about the same as an alloy of two parts of lead, and one part of tin, or "coarse solder," which it resembles more nearly in other respects.

It may be that more approved methods of measuring temperature will give the alloy a still lower melting point than above ascribed to it, as I see that the experiments made by Lipowitz* with my "fusible metal" indicate for it a much greater fusibility than my measurements.—*Amer. Jour. Science and Arts, March*, 1862.

ON ACETIC FERMENTATION.

By M. Pasteur.

Pasteur has observed that the cryptogamic plants of the genus Mycoderma possess the remarkable property of transforming alcoholic liquids into acetic acid. The following are some of the experiments of this skilful chemist:

1. A species of mycoderm is developed on the surface of any liquid containing phosphates and albuminous matters. When the whole surface of the liquid is covered with it, the generative liquid is removed from the plant by a syphon, and is replaced by pure alcohol diluted with water. The mycoderm swells

* Dingler's Polytechnisches Journal, clviii, 376, Lipowitz found that "Wood's fusible metal" when made of 8 parts of lead, 15 parts bismuth, 4 parts tin and 3 parts cadmium, fused at 60° C. (140° F.)—Eds.

and covers the surface of the new liquid. The plant is thus placed in exceptional conditions, its vitality is very much impaired if not entirely extinguished. Experiment shows that the plant under these abnormal circumstances immediately establishes an action between the oxygen of the air and the alcohol of the liquid. Acetification at once commences, and is continued with great activity. It is, however, ended in about four days by the increasing acidity of the liquid. If this is replaced by a fresh supply of dilute alcohol, acetification continues.

During this operation the plant undergoes a kind of combustion, which destroys its substance. In this case the acetic acid and the alcohol completely disappear, and with great rapidity, the liquid becomes neutral and gives birth to divers infusorials.

To return, acetification is produced by a kind of mycoderm.

2. According to Pasteur, all which has been said upon the influence of porous bodies in acetification, is erroneous. The following experiments support this proposition:

If dilute alcohol is made to flow for a month along a cord, the drops which fall at the extremity of the cord contain no acetic acid, but if the precaution is taken of soaking the cord at the beginning of the experiment in a liquid upon whose surface is a pellicle of mycoderm, the alcohol which runs slowly along this cord in contact with the air becomes charged with acetic acid. According to this double experiment, the beech shavings used in the German process serve no other purpose than that of supporting the plant.

In the process such as is used at Orleans, the acetification, according to Pasteur, is due entirely to the almost insensible pellicle that covers the liquids in the tuns, which is formed by the smallest species of mycoderm. The *mother* of vinegar will have no other influence upon the phenomenon.

Pasteur has shown that the mycoderms in presence of sugar and not in contact with oxygen gas have the power of increasing. Their respiration in that case is probably effected by the aid of the oxygen derived from the sugar.—*Journ. de Pharm., et de Chimie*, 1861.

ON THE VISCOUS AND BUTYRIC FERMENTATIONS.

By M. Pasteur.

Favre has announced that the water of barley, rice and wheat, contains a substance capable of changing sugar into a viscous matter without the disengagement of gas. Pelouze and Jules Gay Lussac, having produced viscous fermentation in the juice of the beet root have ascertained in the obtained liquid the presence of mannite and of lactic acid.

Pasteur has succeeded in isolating the vegetable ferment producing the viscous fermentation; the ferment is composed of globules arranged in circlets. The diameter of these globules varies from ·0012 to .0014 millimetre. When these are placed in a saccharine liquid containing albumen in solution, the viscous fermentation is produced. 100 parts of sugar furnish about 51·09 parts mannite and 45·5 parts of gum; besides which it parts with carbonic acid. These are the results of experiments when the ferment composed exclusively of these globules in circlets is operated with. When the proportion of gum is greater than that of mannite, it is perceived that there are other globules in the liquid, larger and of a different nature. It may be possible that the second ferment transforms the sugar into gum alone, without there being any formation of mannite. But Pasteur has not yet been able to isolate this second ferment.

The liquid most prone to develop viscous fermentation can also produce the lactic or butyric fermentation, but in this case the organized beings which are developed in the liquids are of a different nature.

Pasteur has assured himself that the viscous fermentation, the lactic, butyric, &c., are always accompanied by the development of organized beings. He has already described the lactic ferment.

Neither these different vegetable ferments nor these infusoria need oxygen for their development, while the mucedines which are produced in albuminous liquids require for their development, the aid of free oxygen like the vegetables of a higher organization.

The butyric fermentation is always accompanied by the development of infusoria which increase. The life of these in-

fusoria does not require the presence of free oxygen; experiment proves even that free oxygen deprives them of life or motion. Do not these infusoria live at the expense of combined oxygen?—*Journ. de Pharm. et de Chimie*, 1861.

PREPARATION OF HYDROFLUOSILICIC ACID.

H. Deville prepares hydrofluosilicic acid by causing water to fall, drop by drop, upon a mixture of fragments of stone-ware and fluor-spar heated to redness in a tubulated earthen retort, or, somewhat less conveniently, by passing a current of steam through the mixture. By condensing the vapors formed, liquid hydrofluosilicic acid of about 17° B. is obtained, and this by concentration may be brought to 29° and 30° without depositing any silica, while the acid prepared in the ordinary way by dissolving fluorid of silicon in water can be brought to a strength of only about 4° and 5° before the solution becomes solid from the separation of gelatinous silica. At 7° B. a solution of hydrofluosilicic acid contains 66 grms. of the anhydrous acid ($2SiFl_2$, $3HFl$) per litre. At 29°, the maximum condensation, it contains 325 grms. per litre.

The acid of 29° is very energetic, expelling almost all the acids, excepting sulphuric acid, when heated with their compounds. Since it does not attack wood or other organic matters it may be kept in kegs. It has but little action upon vessels of stone-ware, but destroys glass somewhat rapidly with formation of fluosilicate of soda. In the opinion of the author this acid is destined to become of considerable industrial importance. —*Amer. Jour. Science and Arts, March*, 1862, *from Annales de Chim. et Phys.* F. H. S.

ON THE PRODUCTION OF NITRATE OF METHYL.

By M. Carey Lea, of Philadelphia.

For the production of nitrate of methyl but one process appears to have been proposed, and that is to be found in all our text-books, English, German and French. Two parts of powdered nitre are to be distilled in a capacious flask with a recently prepared mixture of 5 parts wood spirit and 10 oil of

vitriol. Judging from the reactions of ethylic alcohol, it did not appear to me probable that such a proceeding could succeed. It was tried, however, and with the following results.

The substances were placed in a flask capable of containing twenty times their united volume, which was connected with a Liebig's condenser by a wide delivery tube. For a few minutes no action was perceptible, but it soon set in, with rapidly increasing violence. Torrents of gaseous products with deep red fumes of oxydes of nitrogen, were evolved, and presently the apparatus blew up with a loud explosion, and had not due precaution been taken with a view to a possible unpleasant conclusion, personal inconvenience might have resulted, for the 3-litre flask was shattered into very small pieces, which were thrown to a considerable distance. The quantities operated upon were small, 50 grammes of methylic alcohol and proportionate quantities of the other substances. No heat was applied.

It is scarcely probable that the gases were evolved in such quantities as to have caused the explosion. It seems more likely that the heat generated by the reaction was sufficient to raise the temperature of the interior of the flask to 150° C., at or below which point, according to Dumas, the vapor of methylic nitrate explodes.

I have had no difficulty, however, in preparing this ether by a different process. By dissolving a considerable quantity of urea or nitrate of urea in methylic alcohol, it supports the action of nitric acid with the utmost facility. The following are the proportions which I have employed.

Into a retort of the capacity of a litre, 200 c. c. of purified wood spirit are placed, and about 40 grammes of nitrate of urea are added and heat applied. When solution has nearly taken place, 150 c. c. of nitric acid free from the lower oxydes of nitrogen,* sp. gr. 1·31, are added, and the mixture is distilled to one-third. 170 c. c. of wood spirit and 130 of nitric acid are then added and distilled to the same point. Finally, 150 c. c.

* Freedom from the lower oxydes is an essential condition of success. That nitric acid is colorless is not in itself a sufficient indication of purity in this respect. An acid which causes the least darkening to a solution of ferrous sulphate is wholly unfit for use in the preparation of either methylic or ethylic nitrate.

wood spirit and 110 nitric acid with 10 grammes of nitrate of urea are added, and distilled to the same point as before. It is useless to carry the distillation further than the point here specified, not that it is accompanied by any inconvenience, but because nitrate of methyl ceases to be evolved. The temperature rises very high at the close of the distillation.

The operation may be carried on rapidly. We are recommended in the text-books to carry off the vapors very carefully in preparing nitrate of methyl, on account of the production of cyanhydric acid as a by-product. In chemical laboratories there is, doubtless, generally rather too little precaution taken than too much against noxious vapors; but in the present case, I have carefully examined the distillate, both in the old process, which failed, and in that which I here propose, and I could find no trace of cyanhydric acid either by the iron or the silver tests, or by conversion into sulphocyanide. Both the ether itself and the watery part of the distillate were tested. As, however, it is impossible without special analysis to know what impurities may be present in so variable a substance as commercial wood spirit, it is difficult to foresee what substances may be generated in its decomposition, but I think I am justified in concluding that cyanhydric acid is not generated by the action of nitric acid upon methylic alcohol; at least not in the presence of urea.

Treated as above described, 420 grammes of wood spirit yielded a distillate, from which by agitation with solution of salt, there separated the very large quantity of 300 grammes crude nitrate of methyl. This may be subsequently agitated with a little weak solution of carbonated alkali.

The wood spirit before use should be distilled with one-third of its bulk of very strong (almost saturated) solution of caustic soda, to decompose any acetate of methyl which may be present. This operation must be performed over the water bath.—*Amer. Jour. Science and Arts, March*, 1862.

AMERICAN CHROME IRON ORE.—ASBESTOS PAPER.

We have received from a correspondent in Baltimore, Mr. Oudesluys, of South Gay St., an excellent sample of the chrome-iron of that locality. It occurs in the form of small black lus-

trous granules, many of which, under magnifying power, appear to be regular octahedrons. There is no appreciable quantity of magnetic oxide of iron intermixed with the sample, nor of other impurities which would tend to lower the per centage of sesquioxide of chromium. The amount of this latter constituent as determined by Dr. Genth, is stated to be equivalent to 63 per cent. of *chromic acid*—a mode of expressing the value of the ore by the quantity of chromic acid produced on fusion with an alkali, and not that of the green sesquioxide actually contained therein. By a qualitative examination we have ascertained that the proportion of chromium must certainly be very large, and have had at the same time an opportunity of corroborating a statement made by our informant to the effect that the mineral requires long-continued fusion to separate the whole of the chromium in a soluble form. Ore of this superior description may be obtained in casks ready for shipment at the rate of about one dollar for each one per cent. of chromic acid per ton, and in quantities of about 200 tons annually. It is, however, considered more judicious to work this ore in admixture with other qualities which are produced in greater abundance,—1500 tons annually,—the average composition of such samples furnishing usually about 50 per cent. of chromic acid. The ore last described was accompanied by specimens of asbestos, and of paper containing about one-third proportion of the same. The mineral may be procured from Mr. Oudesluys at the rate of 1½ cents per pound,—a low price considering the high quality of the article offered. The specimen sent is beautifully white, and the fibres are long and delicate. It has been tried in America for paper-making and for the manufacture of steam-packing, in both of which applications it is said to be very serviceable. Its property of resisting heat and its bad conducting power would render this material particularly valuable in connection with steam machinery. The sheet of paper sent is a portion of an experimental manufacture; it burns with flame, leaving a white incombustible residue, which, with careful management, retains the form of the original sheet, the weight of ash amounting precisely to 30 per cent. Characters written on the paper with ordinary black ink are still legible after burning.—*Chem. News, London, Jan. 25th*, 1862.

ON THE COLOR-TESTS OF STRYCHNIA, AS MODIFIED BY THE PRESENCE OF MORPHIA.

By Robert P. Thomas, M. D.,

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During the last few years, the attention of the profession has been attracted to the consideration of the various means which have been recommended for the detection of strychnia in cases of poisoning by that powerful agent; and some of the ablest minds of Europe, and of this country, have contributed the results of their labors to the common stock of knowledge on this important point. Having received a thorough investigation from such hands, and its relations traced in almost every possible combination or association, and the tests of its presence—both physiological and chemical—having been proved to be alike clear and distinctive, it would appear probable that little more could be added towards the perfection of its history.

Nevertheless, a question of great moment has recently arisen, as to the possibility of detecting it at all, if the poison should be associated with an equal, or a greater quantity *of morphia, or a salt of morphia in the presence of an organic fluid.* An able and exceedingly valuable paper on this subject was published in a late number (Oct. 1861) of this Journal, [see page 212]; and another article on the same is to be found in the *Ohio Med. and Surg. Journal*, for September, 1859.

The property, referred to morphia when combined with organic matter, of preventing the detection of strychnia by color-tests, will, if confirmed, afford a satisfactory explanation of the difficulty experienced by Drs. A. S. Taylor, and G. Owen Rees, in their examination of the viscera of J. P. Cook, as elicited on the celebrated trial of William Palmer for his murder, in England in May, 1856. They could not detect a trace of strychnia, notwithstanding the symptoms antecedent to Cook's decease pointed unequivocally to this alkaloid as the fatal agent. If not decomposed, it must have been masked by the presence of morphia, as Mr. Bamford, the attending physician, administered half a grain of this narcotic, each night, for three successive nights previous to his decease. The circumstances of this trial, and the experiments, described in the papers referred to, furnish

an imperative reason for a further investigation of the subject; as the suicide or murderer can destroy all traces of his work, by simply combining an excess of morphia with a poisonous dose of strychnia. The former will not delay the fatal action of the latter, but on the contrary, will rather aid it.

With the view of determining the important question, whether strychnia is actually decomposed when treated with test-agents in the presence of morphia, or whether it is merely masked by such presence, I have performed more than a hundred experiments, of which an account of a few of the most valuable and satisfactory is now submitted. Premising that, in the examination of minute portions of strychnia, success or failure depends entirely upon the care given to the details. In all of my experiments I employed crystals of the pure alkaloids, and of their salts.

The "color-tests" referred to in this paper, are those furnished by bichromate of potassa, or by the ferricyanuret of potassium (red prussiate of potassa), when added to a portion of strychnia previously dissolved in a drop of strong sulphuric acid. The discrepancies in the results of the published experiments of different observers depends, I think, in a great measure, on their diverse modes of procedure, and therefore I feel justified in giving a precise account of—

The Mode of Testing.—In every instance the material to be tested was employed in the solid form, such as the pure alkaloids or their salts. If it existed in solution, it was reduced to a solid consistence by evaporation in a test capsule, spontaneously, or by a very gentle heat. Having thus procured a solid substance, a small portion of it was placed upon a white plate, a drop of strong pure sulphuric acid was added, and trituration was carefully made with a glass rod until the substance was dissolved. Then a small quantity of powdered bichromate of potassa, or of powdered ferricyanuret of potassium, was deposited on the plate, *near the acid mixture but not touching it*, and to the powder a minute drop of water was added—just enough to partly dissolve it—and then, with a pointed glass rod, a little stream was drawn from each of the solutions in such a direction as to cross each other. Immediately at the point of intersection the play of test-colors was beautifully manifested. When the

bichromate was employed, the sequence of colors was blue or violet, instantly changing to purple, then gradually becoming red, and finally greenish-yellow. When the ferricyanuret was used the color was a rich bluish-purple, changing rapidly to a light rose-red. It is important to proportion the sulphuric acid to the amount of alkaloid, avoiding an excess beyond what is necessary to its perfect solution; and therefore it is better to take the acid out of the bottle by a pointed glass rod, rather than to drop it from the lip.

The first series of experiments was instituted for the purpose of determining how far pure morphia or one of its salts, when combined with strychnia, would prevent the manifestation of the color-tests.

Expt. 1. Accordingly, equal weights of the pure alkaloids were rubbed together in a mortar and tested; next, one part of strychnia to three parts of the sulphate of morphia; then one of strychnia to four of the acetate of morphia; then one of strychnia to eight, and finally, one to twenty parts of the sulphate of morphia. In each case the result was entirely satisfactory; the color-test flashing out, with more or less distinctness in proportion to the relative quantity of morphia, as soon as the margins of the two solutions on the plate came in contact. As intimated above, one solution was made by rubbing the powdered bichromate with a drop of water, the other by triturating a portion of the morphia and strychnia with a drop of sulphuric acid, being careful to use just sufficient acid to insure a perfect solution. I did not consider it necessary to carry this experiment any further, because, in a case of poisoning in which the morphia should be twenty times greater than the strychnia, the fatal result and the attendant symptoms would probably be more characteristic of the action of the former than of the latter, and our experiments would be devoted to its detection.

Expt. 2 was an exact duplicate of the first in all of the varied strengths of the two articles, with the simple difference of having them in solution in water acidulated with acetic acid, instead of being in the solid form.

To obviate the necessity of a subsequent concentration of the solutions by heat, the salts or alkaloids were macerated in small measures only, of acidulated water, and to each solution an ex-

cess of a solution of potassa was added, and then an equal measure of chloroform, which dissolved out the strychnia, and subsequently yielded it as a filmy deposit in a capsule, by spontaneous evaporation.

With sulphuric acid and bichromate of potassa, the proper test-color was manifested by the deposit in each case.

In my opinion, these experiments determine conclusively that strychnia can be detected by color-tests, even when masked by morphia—either as the alkaloid or one of the salts—to the extent of twenty times its own weight.

But the question raised is not so much, whether strychnia will be masked by pure morphia or its salts, uncontaminated with anything else, as whether *morphia in the presence of organic mixtures* has the power of preventing the recognition of strychnia by the usual color-tests. To determine this latter point, my attention was directed in the next instance, to the devisal of a simple and practical method, by which its recognition could be secured. Upon reflection, I concluded that the most feasible plan of overcoming the difficulty, would be to separate the poison entirely from the organic mass, by chemical agents and solvents.

After careful investigation and repeated trials, I selected as the agents the three fluids used in experiment 2. These fluids can always be obtained at trifling cost, of easily ascertained strength, and of known purity. They are, 1. Acetic acid, of the specific grav. 1·041. 2. A solution of one drachm of caustic potassa in a fluidounce of water. And, 3. Chloroform.

Acetic acid was chosen, because, when in excess, it has the property of dissolving all of the ordinary salts, both of morphia and strychnia, as well as their tannates, which are generally described as being insoluble; and, therefore, by treating an organic mass containing these alkaloids with this acid, we would obtain a solution of the acetates of morphia and strychnia.

The solution of caustic potassa was selected for several reasons. For instance, in neutralizing the acetic acid it forms a soluble salt of potassa—thereby getting rid of the acid when we are done with it. It saponifies the fats of the organic materials; it decomposes their sugars; and it dissolves morphia, but does not dissolve strychnia, thus enabling us to separate the one alkaloid from the other by its agency.

Chloroform was resorted to, for its solvent and volatile properties. Thus, 100 parts of it, according to M. Pettenkoffer, at ordinary temperatures dissolve 20·16 parts of strychnia, and only 0·57 parts of morphia. A fluidrachm of it, holding the strychnia in solution, will evaporate spontaneously in a few minutes if placed upon a saucer or plate.

As the solution of potassa dissolves morphia and rejects strychnia, while chloroform has the reverse property of taking up the strychnia and rejecting the morphia, it must be evident that the conjoint use of these fluids would effect an entire separation of the two alkaloids—the morphia being held by the potassa, and the strychnia by the chloroform.

Another important practical advantage in the use of these fluids is found in their different specific gravities. The chloroform, being the heavier, sinks to the bottom of the vessel containing them, and thus a separation is easily accomplished.

The eliminating properties of the three fluids were determined in the following way:—

Expt. 3. One grain of strychnia and three grains of opium were macerated for three days in a mixture of equal measures of acetic acid and water; then filtered, and to the clear liquid equal bulks of the caustic solution and chloroform were added, and the whole well shaken together. Upon subsidence, the chloroform was separated, and a part of it evaporated on a plate. The deposit, thus obtained, was treated with sulphuric acid and the bichromate of potassa, in the manner before described, when a fine play of test-colors resulted.

In this and the subsequent experiments, care was always observed to have the caustic solution in sufficient excess over the acetic acid to dissolve the morphia, and leave the solution alkaline to test paper.

Having thus determined the practicability of regaining the strychnia, in a separate state, from a solution in which it had been associated with the various alkaloids of opium, I proceeded, in the next instance, to the examination of its relations to morphia in the presence of organic matter. For this purpose a nutritive mass was prepared as the representative of the contents of a man's stomach, if death should occur soon after a meal. The mass consisted of two ounces of minced-meat (such

as is used for pies, and containing meat, suet, various dried fruits, cider, spices, and a little brandy), two ounces of bread, a portion of salt, pepper, and vinegar, and two fluidounces of a strong infusion of coffee, well-sweetened. In other words, an association of the nitrogenous and non-nitrogenous elements of food, with spices, alcohol, tannic acid, and caffein. To this mass, one grain of strychnia and five grains of morphia, which had been previously well triturated together and dissolved in a mixture consisting of one fluidrachm of vinegar and 15 fluidrachms of water, were now added, and the whole carefully mixed.— The mixture was set aside for twenty-four hours to permit the alkaloids to permeate the entire mass, and it was then divided into four equal parts. Each part being made the subject of an experiment, as follows:—

Expt. 4. The first portion, containing one quarter of a grain of strychnia and one and a quarter grains of morphia, was treated with f℥ij of acetic acid (1·041), and f℥iv of water. The mixture having been allowed to stand for sixty hours, was raised to the boiling point and ebullition was maintained fifteen minutes. Having been strained and filtered, equal quantities of chloroform and the caustic solution were added to the filtered liquid; the whole were well agitated together, and after subsidence, the chloroform was separated and evaporated. Upon treating the deposit with sulphuric acid and ferricyanuret of potassium the distinctive play of colors appeared.

This experiment proves that strychnia is not decomposed by a heat of 212°, maintained for a short period, even though morphia and organic matter be present. The elevated temperature is objectionable, however, from the large amount of starchy matter dissolved by the boiling water, which clogs the subsequent steps of the process.

Expt. 5. The second portion, containing the same amount of alkaloids as the preceding, was macerated twelve hours in f℥ij of acetic acid, and f℥ij of water, then strained with pressure and filtered. The resulting liquid was treated with equal measures of chloroform and the caustic solution. The deposit from the evaporated chloroform yielded the proper colors with the test-agents.

This, like many subsequent experiments, proves that it is un-

necessary to employ heat; acetic acid, mixed with an equal measure of cold water, being amply sufficient for the extraction of alkaloids from an organic mass.

Expt. 6. The third portion was macerated, like the preceding, for twelve hours, in acetic acid diluted, and then pressed and filtered. The resulting liquid was placed in a capsule before the register of an ordinary house-furnace, and was evaporated to a syrupy consistence by the warm air passing over its surface. To this, the chloroform and the solution of caustic potassa, in equal measures, were applied, and all well mixed. The separated chloroform yielded a deposit which was proved to be strychnia by the test-agents.

By this experiment, we learn that a solution containing both alkaloids in contact with organic matters may be evaporated, by a moderate heat, almost to a solid consistence, without their decomposition.

Expt. 7. The fourth portion was set aside for twelve days in a room having a temperature of 68° to 70°. At the expiration of this period, the mass had become sour and offensive, and was spotted with crusts of mould. It was then macerated for twelve hours in a mixture of f.℥ss of acetic acid, and f.℥jss of water. After which it was strained, filtered, and evaporated, like the preceding, to the consistence of syrup, by the passage of a current of warm air over the surface. As the resultant liquid was intensely sour as well as bitter, I added two measures of the caustic solution and one of chloroform, and agitated the mixture as in former cases. When the chloroform was separated, and a part of it evaporated in a capsule, the most beautiful and distinctive colors appeared after the employment of the proper tests.

This experiment was instituted for the purpose of ascertaining whether strychnia is liable to undergo any change in the presence of organic matter by the lapse of time, even where that matter has fermented and exhibited evidences of incipient decomposition. The result affords a strong inference that it could be detected in the contents of the stomach after a body had been deposited several days in the grave.

I carried this experiment a step further with a view of determining whether morphia could also be regained from an organic

mixture in a state of commencing decomposition. Consequently, after separating the chloroform and caustic solutions from each other, I added acetic acid to the latter, drop by drop, until it was neutralized. Then a solution of tannic acid was added, and the precipitated tannate was collected and dissolved in acetic acid. The solution afforded a red color with nitric acid, and a rich blue color with the persulphate of iron, and was, moreover, very bitter to the taste. Thus establishing, conclusively, the presence of morphia.

Having entirely satisfied my own mind, by the foregoing experiments, that no inherent difficulties exist in the detection of strychnia by the color-tests when it is associated with morphia and involved in a great mass of animal and vegetable matters, I might with propriety dismiss the subject. But as so large a quantity as a grain of the poison might not be found in the stomach after death, in consequence of the use of emetic remedies, or the partial absorption of what had been swallowed, I concluded to try the process on a much smaller scale, and accordingly performed, as follows :—

Expt. 8. Two ounces of minced-meat (similar to that used in experiments 4, 5, 6, and 7), and two ounces of bread, were macerated eight hours in four fluidounces of water, holding in solution one-hundredth of a grain of strychnia, and one-thirty-third of a grain of the sulphate of morphia.*

Half a fluidounce of acetic acid, with an equal measure of water, was added, and the mixture set aside for six hours. It was then strained, with pressure, and filtered. The remaining clear liquid was divided into two portions, *a* and *b*.

One portion (*a*) was placed in a capsule in a current of air at 70°, and thus evaporated to a syrupy consistence. It was treated with the caustic solution and chloroform, as in the former cases; and, upon careful application of the tests to the film obtained by evaporating the chloroform, clear and undoubted

*These minute quantities were obtained with great accuracy by dissolving one grain of the former, and three grains of the latter, in fifty fluidrachms of water, acidulated by a few drops of acetic acid. Half a fluidrachm of this solution contained gr. 1-100th of strychnia and gr. 1-33th of the sulphate of morphia.

evidences of the presence of the poison were afforded by a transient yet distinct play of colors.

The other portion (*b*) was treated directly with a measure of chloroform and two measures of the caustic solution. After mixing these carefully together, the chloroform was drawn off, placed in a capsule, and evaporated spontaneously. A very delicate filmy deposit, of a white color and bitter taste, was observed in the capsule. A part of this gave, with sulphuric acid and ferricyanuret of potassium, a distinct but evanescent change of colors, indicating positively the presence of strychnia.

To determine more satisfactorily the precise nature of the deposit obtained from this experiment, I evaporated, upon a slip of glass, drop after drop of the chloroformic solution, until an appreciable deposit was procured, and to this a drop of dilute nitric acid was added. When dry, it was placed under a microscope at a magnifying power of 100 diameters, and a crop of well-defined crystals of the nitrates of strychnia and brucia was apparent.

This experiment proves conclusively that strychnia in minute quantities can be regained from organic mixtures, notwithstanding the presence of three times its weight of sulphate of morphia.

In conclusion, I may be permitted to offer to those who shall be called upon to determine the presence or absence of strychnia in cases of suspected poisoning, a few practical suggestions, viz:—

1. In testing for minute portions of the poison, success or failure depends entirely upon the care given to the details of the process.

2. In examining the contents of a stomach, the employment of heat is not required for the detection of strychnia, nor should any unnecessary fluid be added which might require subsequent evaporation. Equal measures of acetic acid and cold water, in sufficient amount to thoroughly acidulate the mass, are all that is requisite to extract any alkaloids or their salts that may be present, and, to insure success, these must be reduced to the solid state.

4. In the application of reagents for the production of the color-tests, care should be observed not to add any more sul-

phuric acid to the strychnia than what is necessary to dissolve it; and, in like manner, the powdered bichromate of potassa, or ferricyanuret of potassium, should only be moistened, as by touching a glass rod with the point of the tongue and then rubbing it over the powder. In this manner, two saturated solutions or mixtures are obtained, which show the play of colors as soon as their margins are brought into contact, even though the quantity of alkaloid present be very minute.—*Amer. Journ. Med. Sci., April*, 1862.

CONTRIBUTIONS TO THE HISTORY OF NAPHTHALINE.

By M. J. Persoz.

After reading M. Roussin's interesting communication,* on an artificial colored product, said to be identical with alizarine, I think I ought to make known to the Academy the results I obtained two years ago, while studying, with M. Martel, the derivatives of naphthaline.

Starting from the fact, established by us, that a mixture of commercial nitre and sulphuric acids, even in very variable proportions, will, when heated with naphthaline, readily yield colored products, we have naturally been led to examine the action of concentrated sulphuric acid on the various nitrogenized compounds of naphthaline.

This is a very difficult study, however simple it may at first sight appear, because the least changes of the condition under which the experiment is performed, exercise a sensible influence on the results. The dye principle formed, possesses the property of madder in dyeing mordants; its color varies from red to blue, and passes through all the shades of violet.

The blue was only obtained accidentally; and we are unable to state the precise conditions of its formation, though it appears to be due to a molecular change in the nitrogenized naphthaline compound, under the influence of a physical agent.

As the violet-blue tints are the most beautiful, we have devoted most of our attention to them, and have endeavored to produce them; thus working in an opposite direction to that of

* See page 558, vol. ix., 3d series Am. Jour. Pharm.

M. Roussin, who is chiefly occupied with the reds. We soon found that binitronaphthaline, heated with sulphuric acid only, was best suited to our purpose. In his last communication to the Institute (*Comptes Rendus*, vol. lii. p. 1033,) M. Roussin says:—"By making concentrated sulphuric acid react on binitronaphthaline, no reaction takes place. The binitronaphthaline is completely dissolved, when the mixture is heated to 250°, and the liquid takes hardly an amber color. After boiling for a long time, the concentrated sulphuric acid began to react on this substance." Binitronaphthaline resists the action of sulphuric acid at a very high temperature, however, at about 300°; the color of the solution, at first slightly yellow, deepens more and more, becomes cherry-red, and finally brownish-red, beginning at the same time to disengage a small quantity of sulphurous acid. The progress of the operation is easily followed by taking up occasionally a drop of the liquid with a rod, and dropping it into a glass of water. Thus at first a white milky precipitate is obtained, then a light violet; and, finally, when the color is completely developed, a dark violet.

The substance is then taken from the fire, and left to cool, when it is poured into a proper quantity of water and boiled. The liquid, filtered whilst hot, is of a deep red color, and deposits part of the coloring matter in a flaky state. Alkalies change it to a violet red; and even when cold, silk was easily dyed violet by it. After being properly saturated with alkalies, and finally with a little chalk, it dyed mordanted cotton tissues with different shades, varying from lilac to black. The lakes with alum, tin, and lead for a base, are violet; those with iron for a base were olive, and sometimes reached to black.

In fact, this solution does not seem to alter even during any length of time, in presence of sulphuric acid; though, when in contact with air and excess of ammonia, it changes to brown in a few hours, depositing a black powder, which becomes blue when dissolved in alcohol, and red in acids.

The black mass proceeding from the precipitation of the sulphuric solution by water, contains a large quantity of coloring matter, which we were able to separate by means of M. Payen's digesting apparatus. This coloring matter has a beautiful gold reflection, is very soluble in alcohol and pyroligneous acid; but

very little soluble in water, ether, benzol, and bisulphide of carbon. As we have before said, it has many chemical analogies with alizarine. In fact, according to whether a bath is slightly acid or alkaline, we can dye the iron mordants to the exclusion of alum mordants, and reciprocally. Moreover, the dyed tissues bear brightening with soap, carefully done, that is to say, progressively. Finally, the coloring matter readily sublimates under the influence of a high temperature.

It is evident, then, that with binitronaphthaline and concentrated sulphuric acid only, without making use of a reducing agent, as M. Roussin has done, a coloring matter may be obtained with marked analogies to alazarine in its chemical properties; however, the observations I have made during my operations, have led me to doubt whether it is possible, even while obtaining perfect red tints, to prepare in this way a coloring matter identical with that of the madder.—*Chem. News, London, Jan.* 11, 1862, *from Comptes Rendus.*

GROWTH OF CINCHONA IN INDIA.

Dr. Anderson has returned to Calcutta from his mission to Java, with the large number of 412 cinchona plants of three species, and with half a million of seeds. The cultivation of cinchona in Java, which began with 139 trees in 1855, has hitherto been most successful, but the Dutch do not possess many specimens of the variety whose bark yields the largest proportion of quinine. Dr. Anderson was enabled to supply them with some of the best specimens in return for their liberality and courtesy. Of one species the Dutch have now no less than a million of plants, and of two or three others they possess several thousands. In June, 1857, the whole number they had was only three hundred, so rapidly have they propagated themselves. The well known German naturalist, Dr. Junghuhn, is in charge of the plantations, and he was recently joined by Dr. de Vry, a chemist not unknown in England to the members of the British Association. The Report of the first of these gentlemen, now before us, details, with scientific prolixity which we shall not inflict upon our readers, the various steps of the experiment. Southwest of Tjibodas, 4,100 feet above the sea, in

the very centre of Java, natural forests extend for miles, the soil consisting of loosely heaped blocks of trachytic lava. To this spot, under the shade of wide-spreading branches, the plants which had withered in a more exposed locality, were transferred in October, 1857. Six months after, they begun to die in their new habitation, and the cause was soon discovered in a small beetle of the "bostrichus" species, never before seen in the Java forests, which deposited its brood in the trunk. After many difficulties and experiments with soils and localities, the Malawar mountains have proved the best spot. The slightest differences of altitude, light, and temperature, affect the *calisaya* variety. The hardiest, though least valuable, is the *lucumaefolia*, but if the former be planted early in good, loose forest soil, and moderate shade, particularly in the region of from 5,000 to 5,700 feet above the sea, it grows up as tall and luxuriantly as any. Each capsule of each plant contains an average of twenty-five seeds. One *calisaya* yielded 485 capsules and each good plant may be said to yield 1,300 seeds. Of 2,000 well developed seeds sown with care on cleared soil under the shade of trees, only one grows to a real plant; for the slightest touch, even of a drop of water, or a crawling worm, kills the root of the young germ. At first the plants grow slowly, but after two years they are two feet high, and then shoot up with great rapidity if raised from seed. The plants thus successfully introduced, an important question arises—Will they yield as much quinine as in their native home in Peru? To test this Dr. de Vry was sent to Java, and he records with no little triumph how, on the 21st of July, 1858, two and a half years after the first plants were introduced, he was enabled to produce a pure white crystallized quina alkaloid from the bark of one of those stems which the beetle had destroyed. Soon after he obtained from a *calisaya*, not five years old, the same per centage of quinine which the Bolivian trees yield, or 3.12. At the end of 1861, the experiment in Java, only six years old, has thus succeeded most completely. Many of the trees are now thirty feet high.

This is full of hope for India, where the plant is now being grown under exactly the same conditions. The total number of plants is 5,847, and more than half are of that red bark variety which is most valuable, the dry bark selling at from 2s. 6d. to

8s. 9d. per lb. Rich as are the forests of Bolivia, from which the world draws its sole supply at present, they will not last long. Formerly the trees were every where found around the inhabited parts of the region, but now to meet with one of a tolerable size it is necessary to penetrate several days' journey into the forest. What India is doing as a substitute for North America in rice and cotton, she must become for South America as an exporter of quinia bark. We believe a nursery will soon be established on Khasai Hills. In less than ten years India should supply herself with all the quinine she needs. In a few more, sulphate of quinine as well as quinia bark, should bulk largely among her exports.—*Med. News, from Friend of India.*

A QUICK AND EASY METHOD OF PREPARING SULPHATE OF CADMIUM.

This method, adopted by the author, is nothing more than the application of the fact observed in 1792 by Richter, that a metal plunged in a saline solution substitutes itself for the metal, which forms the base of the salt employed. A quantity of crystallized sulphate of copper, say 100 grammes, is dissolved in water, and a piece of cadmium, rather more than is necessary to saturate all the sulphuric acid, or in this case more than 44·59 grammes, is plunged into the solution. The whole having been allowed to stand for some time, the precipitated metallic copper is then separated by filtration and the liquid slowly evaporated. If during evaporation the neutral solution of sulphate of cadmium should deposit a small quantity of sesquioxide of iron, which not only constitutes an impurity, but gives the salt a bad appearance, it is necessary to expose the solution to the atmosphere until all the iron which it may contain has been eliminated, which is accomplished when after a second filtration the transparency of the solution is no longer disturbed. To obtain finally the sulphate of cadmium in well-formed crystals, it is necessary to acidulate the solution slightly with dilute sulphuric acid.—*Repertoire de Pharm. from Journ. Md. Col. of Pharm.*

ON THE ORIGIN AND PROGRESS OF THE PHOSPHORUS AND MATCH MANUFACTURES.

By G. Gore.

(Concluded from page 155.)

The latest improvement of note in the manufacture of matches is that of M. Lundstrom, of Jonkoping, in Sweden. It consists in dividing the ingredients of the match mixture into two separate compositions, one being placed upon the ends of the splints as usual, and the other, which contains the phosphorus, being spread in a thin layer upon the end or lid of the box. The patentee uses the following mixture for the splints:

Chlorate of potash . . .	6 parts.
Sulphide of antimony . .	2 to 3 "
Glue	1 "

and the following for the friction surface, which has been previously made rough by a coating of glue and sand:

Amorphous phosphorus . .	10 parts.
Sulphide of anatomy or peroxide of manganese .	8 "
Glue	3 to 6 "

By this method the danger of fires arising from ignition of the matches by friction is avoided (because the matches will ignite by rubbing upon no other surface besides the prepared one); and that of poisoning is totally prevented by using the red or innocuous variety of phosphorus.

There is scarcely any manufacture of which the statistics appear more fabulous than that of match-making. To begin with England, in which the manufacture is comparatively small. The firm of Messrs. Dixon, Newton Heath, employ about 300 workpeople on the premises, and upwards of 100 at their own homes. Their stock of timber is generally of the value of about 8000*l.* or 10,000*l.* They consume 1 ton of sulphur per week, in the sulphuring of splints; and in twelve months they use between 4 and 5 tons of chlorate of potash, and 12 tons of glue. They produce about 43,000,000 of matches every week, or 2,160,000,000 matches yearly; reckoning the length of a match

at 2¼ inches, the total length of these would far exceed the circumference of the earth. In London a single saw-mill cuts up 400 large timbers annually to make splints for matches. It has been estimated that from 12,000 to 15,000 gross of boxes of matches are produced weekly in London, indicating a production of 5,000,000,000 of matches yearly in that city. And another calculation has been made that the whole length of waxed cotton wicks consumed by one London manufacturer in the production of "Vestas" would be sufficient to reach from England to America and back again. One pound of phosphorus is sufficient for tipping 1,000,000 of German matches, or for 600,000 English ones.

The yearly consumption of phosphorus in the manufacture of matches in this country has been estimated at 6 tons, which, at a price of 2s. 6d. a pound, amounts to a value of 1680*l.*; and of chlorate of potash, 26 tons. A single merchant of London imports 8000 cwt. of cases of matches yearly. In 1854, 20,000*l.* worth of matches came into this country from the city of Hamburg alone. We import at the present time at least 1500 tons of matches a-year from Sweden only. It has been estimated that 60,000*l.* worth of matches are imported yearly into Great Britain,—equal to 200,000,000 of matches daily; and that our daily consumption approaches the enormous number of 250,000,000, or more than 8 matches each day for every individual in the kingdom. In Belgium, the consumption of matches has been calculated to be 9 matches per day for every living person.

In France, the manufacture of matches is very extensive. Paris alone employs 1,000 operatives, and produces 990,000,000 of boxes, worth in total 7200*l.* yearly. In Sweden there are 6 or more manufactories of matches; in one of them, in 1848, there was employed about 400 workpeople, and produced between 8,000,000 and 10,000,000 of matches daily.

But the greatest seat of match-making is located in Austria, where there are numerous manufactories which produce many millions per day of phosphorus matches: for instance, those of M. Pollak, at Vienna, and M. Fürth in Bohemia, consumes together about 20 tons of phosphorus annually, and give employment to about 6000 persons; and as one pound of phosphorus

suffices for upwards of 1,000,000 of their matches, those two makers alone produce the amazing number of 44,800,000,000 of matches yearly. In the year 1849, there was exported from the port of Trieste alone nearly 200 tons of lucifer matches, and the whole produce of matches in Austria in that year was estimated at 2500 tons.

The cost at which both boxes and matches are produced is equally startling. M. Fürth "sells his cheapest boxes at one penny per dozen, each box containing 80 matches." Peter Harrass, of Suhl, in Prussia, sells his plain boxes at twopence per 100, and 1400 splints for one farthing. And De Majo, of Moravia, "sells a case of 50 boxes, each containing 100 lucifers, for fourpence."

Notwithstanding the great and universal advantages conferred upon mankind by the introduction of phosphorus into the manufacture of matches, it is not without some serious drawbacks. It produces a most painful disease, which attacks the jaw-bones of the workpeople, and causes them to decay, until, in some cases, they are entirely destroyed. The disease only attacks the operatives who are exposed to vapors arising from the match composition,—chiefly those who dip the splints, also those who are occupied in drying, cutting, and boxing the dipped matches. The workmen employed in other parts of the manufacture are wholly unaffected. The disease has been fearful in Germany and France, where so much phosphorus is used in the match composition, so much so as to excite the attention of the Governments of those countries; but it has not appeared to so great an extent here. It may be considerably, if not entirely prevented, by particular attention to cleanliness and ventilation, which has been already proved in the establishment of Mr. Hynam, of London; the most effectual remedy, however, would consist in the use of amorphous phosphorus instead of the ordinary variety. It is to be remarked, that in the manufacture of the phosphorus itself, the experience of many years has shown an almost complete immunity from any symptom of the disease; this may be partly attributed to the fact that the substance is kept covered with water from its first production to the vessels in which it is finally packed for sale.

Another great disadvantage is, that ordinary phosphorus is

highly poisonous, and several instances are upon record where children have been killed through sucking the composition from the ends of matches. It might be also used for intentional poisoning, especially as phosphorus exists naturally to a large amount in the tissues of the human body; and phosphorus introduced into the stomach becomes gradually converted into phosphoric acid, which cannot readily be distinguished from that naturally present. The amorphous variety could not produce poisoning either by accident or intention, for Dr. De Vry, of Rotterdam, has administered it in various doses to animals without producing any ill effects.

Conflagrations have also frequently resulted from ordinary phosphorus matches, which could not possibly have occurred with the matches made with amorphous phosphorus under the patent of M. Lundstrom, already mentioned. In the records of fire insurance, we find that calamitous fires have been produced by cats knocking down boxes of matches, and by rats gnawing the ends of matches.

Let us endeavor to draw a useful lesson from the facts we have recorded,—not to despise or think lightly of the abstract facts or "small beginnings" of philosophers, but rather to foster them; sooner or later, they may become of value to ourselves or our successors. Who would have thought that the curious, stinking, unctuous, luminous wax of Master Brandt would ever have become so important and universal an agent of civilization? That great modern innovator, the scientific faculty of man, has, by the certain process of experiment and induction, so immensely improved the means of producing phosphorus, and so marvellously adapted its properties to the uses and requirements of domestic and general life, that it has extended the civilizing and ameliorating influence of the lucifer match to the uttermost ends of the earth. The matches of London, Manchester, and Vienna, are to be seen in the wigwam of the far-west Indian, the bush dwelling of the Australian, the habitation of the Mussulman, the frozen hut of the Greenlander, the hovel of the peasant, and the palace of the Emperor. Everywhere, as commerce extends its boundaries into newly-discovered regions, it is one of the first articles of civilization which is introduced. —*Chem. News, London, Aug.* 17, 1861.

ON THE EMPLOYMENT OF ARSENIURETTED ALCOHOL FOR THE PRESERVATION OF OBJECTS OF NATURAL HISTORY, ESPECIALLY INSECTS.

By M. Leprieur.

At the ordinary temperature pour 500 grammes of rectified alcohol, weighing at 94 per cent., on an excess of opaque arsenious acid. After eight hours of contact, during which time the liquid is frequently shaken, the alcohol is filtered. Upon evaporating 200 grammes of the solution in a platinum capsule over a water-bath, a residue is left weighing 00·3 grammes, or 0·15 grammes per kilogramme. On employing alcohol at 85 per cent. a residue is left of 0·102 grammes, or 0·51 grammes per kilogramme. If the alcohol at 85, and the arsenious acid, are kept in contact for four months, the residue weighs 1·38 grammes per kilogramme.

To be as energetic and complete as possible, the action of the arseniuretted alcohol should take place on tissues very recently deprived of life; it is, consequently indispensable in the case of insects, for example, that they should be immersed in it whilst still alive, or, better still, after having been asphyxiated with the vapor of ether, chloroform, or benzole. Some of them, indeed, must not be immersed living in even pure alcohol, for as soon as they touch the liquid they open their elytra and spread their wings as if they wished to fly away.

Almost all the coleoptera, the hemiptera, and even the orthoptera, can be plunged without danger into the arseniuretted alcohol, provided they are not left in longer than ten or twelve hours; after this time they must be taken out of the alcohol and thrown upon blotting paper, then they are to be pricked or cemented down until they have lost by evaporation the greater part of the liquid.

When the insects have been allowed to dry before being plunged into arseniuretted alcohol, the action of the latter is not so efficacious; when a collection is much attacked by larva, recourse must be had to an immersion for twelve hours.

Of all the methods which have been proposed to preserve collections, this is, according to M. Leprieur, the best. He has

employed arseniuretted alcohol for twelve years, to the exclusion of all other means and with uniformly good results.

It follows from M. Leprieur's experience that living insects, plunged into arseniuretted alcohol, and removed after remaining there for twelve hours only, increase in weight, by about one-fourth; insects, therefore, preserve in their organs an amount of arsenious acid about equal to $\frac{3}{1000}$ of their own weight, a quantity quite sufficient to protect them from destruction by larvæ.

According to M. Leprieur, the employment of an alcoholic solution of arsenious acid possesses the advantage of preventing, in an almost absolute manner, the ravages of larvæ, whilst all other means, whatever be their efficiency, can have no other result than the actual destruction of the larvæ already present in a collection, without having any power to protect them from future ravages.—*Chem. News, London. from Journal de Pharm. et de Chim.* vol. xxxix.

ON PHOSPHORESCENCE.

By M. De Reichenbach.

The experiments of M. De Reichenbach tend to prove that phosphorescence is a usual consequence of all molecular phenomena, and not the result of combustion or oxidation. Mr. Phipson proved this last point some time ago, when he showed that dead fishes shine in the dark, even under water, and in the absence of oxygen.

According to M. De Reichenbach there is phosphorescence during fermentation or putrefaction, crystallization, evaporation, condensation of vapors, the production of sound (vibrations therefore), and the fusion of ice; a considerable glow is remarked when a galvanic pile is in activity, a block of ice in fusion, or a solution of sulphate of soda in the act of crystallizing is observed in the dark.

The human body itself is not devoid of phosphorescence: in a healthy state it emits a yellow glow; when in ill-health the glow becomes red. The author considers that this observation may possibly be of use in diagnosis.

To perceive these phenomena the eye ought to have been previously rendered sensitive by remaining some hours in perfect

darkness, and even then all eyes are not equally impressionable. But, if several persons unite in performing the experiment together, there will always be a certain number who are able to see the phenomena.

These facts of the production of light remind the author of observations published some time ago by M. Wullner, according to which every molecular movement is accompanied by a disengagement of electricity.—*Chem. News, London, Nov.* 23, 1861. *from Poggendorff's Annalen.*

ON THE COPPER TEST FOR SUGAR.

By John Horsley.

A few weeks since the Chemical News contained a review of "Braithwaite's Retrospect," in which allusion was made to a new cupreous preparation, by Dr. Pavy, for the detection and estimation of sugar, which he recommended as being superior to either Barreswill's or Fehling's. In that respect I differ with him, having tried his method, and object to it on account of the excess of caustic potash it contains, having known instances where the copper was reduced *per se* on standing.

Like the Doctor, I have been so dissatisfied with the reduction by copper solutions as to direct my attention to other agents, till I found out that it was not so much the test itself as the mode of manipulation that required improvement, the copper test being delicate enough when well prepared, and the saccharine fluid sufficiently pure. The ordinary method of procedure is, I believe, pretty much as described by Dr. Pavy,—viz., to boil and decolorise the cupreous liquor by the addition from time to time of the saccharine solution; it being generally supposed that the powers of the sugar are defunct at the moment the blue color disappears, than which nothing is more fallacious, the sugar then being in excess, as may be proved by a further addition of the test and re-boiling. In fact, you may even make such an addition of the test as that, on boiling and filtering, the liquor shall pass through highly colored, and yet contain sugar, which will not cease to reduce copper till after two or three other boilings and filtrations have been made. The filtered liquid being permanently blue or blueish-green, and yielding no fur-

ther red precipitate after several minutes' boiling, is the alone criterion of the exhaustion of the sugar, which is just the inverse of the present method. The filtered blue liquid may be again rendered available for other reductions by concentration or evaporation down to about the tone of the original copper solution used. The following is the formula by which I make the solution of copper:—Sulphate of copper, half-a drachm; distilled water, three ounces. Dissolve by heat, then add, tartaric acid, half-a drachm; and, when cool, caustic potash, one and a-half drachms; and, lastly, pure carbonate of potash, one and a-half drachms. An ounce of this liquor boiled with half-a-grain of grape sugar, dissolved in a little water, gave a scarlet red precipitate of one and a-half grains, every three parts representing one of sugar. The $\frac{1}{960}$th part of a grain of sugar produces a decided precipitate. Diabetic urine ought to be purified by precipitation with excess of sugar of lead, and any remaining lead thrown out by passing a stream of sulphide of hydrogen, the liquid filtered and evaporated to about half its bulk previous to applying the cupreous liquor; but if the quantity of lead salt be nicely adjusted, there will be no necessity for using the gas. High-colored urine, supposed to contain sugar, requires, in addition to the precipitation by lead, to be decolorised by animal charcoal, and before using the test any lime which may have been acquired from the charcoal should be extracted by boiling the filtrate with a little carbonate of potash and filtering. Such urine will not afford, like true diabetic urine, a red precipitate, but a muddy, yellow one, if sugar exists at all, and the filtered liquid, instead of being blue, will be yellowish green.

Although it has been stated, on the authority of Brucke and others, that sugar obtains in ordinary or healthy urine, I have not been able to verify it by tests, owing probably to not having operated on a sufficiently large quantity. The only way of proving it, I presume, would be by carefully evaporating to an extract the purified urine and adopting the fermentation process. —*Chem. News, London, Nov.* 30, 1861.

ON THE PREPARATION OF EXTRACTS.

By Mr. Thomas B. Groves.

I am inclined to believe that some at least of the views expressed by our President in a paper before the meeting of November 6, 1861, will, notwithstanding the high authority of their author, be received by Pharmaceutists generally with diffidence, if not entire discredit.

For one, I am not disposed to admit that wholesale druggists, either invariably, or, as a general rule, employ the process "which gives the best result in the most direct manner," unless indeed by the "best result" is to be understood the best in a commercial sense.

Nevertheless their experience is doubtless of great value to us on many points, though the preparation of "Eclectic" medicines may not be one of them.

I am not a large manufacturer, but a very small one, and my experience is limited to a few plants that grow in my neighborhood, being too far from Covent Garden to avail myself of its treasures, without risk of their loss or deterioration.

The plant I have more especially worked is the *Hyoscyamus niger*, which is most years obtainable in considerable quantity and great perfection from the rocky soils in the vicinity of the sea, or from the the sea-cliffs themselves. I have it gathered when in full flower, and so soon as possible after strip the leaves and tender summits of the stalks from it, bruise them in a marble mortar, adding a little water should the mass not be sufficiently pulpy, express and evaporate by steam bath, without further treatment of any kind. The extract of Henbane, so prepared, I have never observed show a symptom of mouldiness, and have frequently kept it without extra precaution for two or three years, though the extract of *Conium* made in the same manner keeps badly.

Its narcotic smell and bitter taste are very striking; indeed so much do I prefer it to any I can buy, that I always make as much as I can, to be on the safe side in case of an accidental dearth of the plant.

I have always attributed the comparative inferiority of the purchased extracts to two causes: first, the use of the whole

plant instead of the leaf only; second, the plant being cultivated instead of wild.

The first cause was not assigned without consideration aided by experiment.

I judged that the juices of a young herbaceous plant were *not likely* to be similar in every part of it (thus differing from a gentleman who spoke on this subject at the meeting), but that the juice of the stem and branches would in all probability mainly consist of a watery solution of the inorganic food of the plant on its way to the leaves for elaboration and fixation, and of gummy, albuminous and other inert matters contained in the stem; that as the plant grew older and commenced forming its seed, a portion of such elaborated food would proceed in that direction, and be found *in transitu* in the softer part of the stem above the leaves. In the case of plants which form fleshy roots, tubers, etc., the course of the sap would be also diverted downwards through the stem, in all cases carrying with it the active principles of the plant, where such active principles are found in the fruit, or root, or both. Only in those cases therefore where the active principles of the plant are eventually more or less completely collected in the root, should I be prepared to find the juice of the stem rival in activity that of the leaves.

Hyoscyamus niger is not one of those cases. I therefore made the experiment of treating in a precisely similar manner, equal portions, twenty ounces, of rejected stems, and of leaves and tops such as I always employ for extracts. I may here state probably I reject on an average two-fifths of the plant; the individual proportions however are very wide of the average.

The stems yielded 5¼ dr. of a pale green extract, very saline in taste and less bitter and odorous than the 9½ dr. of dark extract I obtained from the leaves. The pale green extract was so evidently inferior that the physiological test was not resorted to.

The mixture of the poor and saline extract of the stem with the rich and characteristic extract of the leaves, in my opinion accounted for much of the inferiority of purchased specimens. I therefore put by specimens of both extracts and of their mixture, for the purpose of illustrating a paper I intended sending to the Society; but, having first prudently consulted the old Jour-

nals, to see whether the same results had been announced before, I there found, in the first volume, a paper by Mr. Squire, which completely took from me all claims to originality, so I desisted from my intention.

The views there expressed are so diametrically opposed to those of the more recent contribution, that I wonder reference was not made by the author of both, or by the meeting, to the fact. I quote the following from page 97, Vol. I. 'Pharmaceutical Journal;'—"The different parts of the plants which should be selected, is a subject of great importance. The Colleg directs the leaves of those which are principally adverted to, and I think very properly. I have placed on the table for comparison, juice from the stalks of *Hyoscyamus* and juice from the leaves of *Hyoscyamus*, also two portions of extract resulting from equal bulks of juice; the one from the stalks, the other from the leaves. The sensible properties of these preparations will enable the Society to distinguish their wide difference."

The question, it must be remembered, is not merely which process yields the better, but also *which the stronger*, extract; and whilst I am quite willing to admit that the gummy and saline extract of the stem would greatly aid the keeping qualities of the extract of the leaves, I must dissent from the opinion that it is stronger, until more conclusive experiments have made the point certain, and indicated in each case the limit within which the use of the stem must be confined. To improve their consistence, and thereby aid their keeping, the addition of gum is recommended by Gray, and I have long suspected the use of salt for the same purpose by modern manufacturers. The single experiment on which is founded a change of opinion as to the relative strength of the two extracts, must in candor be admitted to be a highly inconclusive one. But one species of plant was tested, and that gathered at an exceptional time, and in a most unusual condition, as is evidenced by its enormous yield of extract; fully three times the ordinary yield.

Again, knowing the extreme sensibility of the eye to the action of Belladonna, we should hesitate to receive any statement as to relative strength of specimens by means of that organ, before knowing the exact mode in which the results were obtained. The best plan appears to me to be this:—gradually dilute

each specimen until it ceases to have any dilating effect, and then see which has borne dilution best.

Finally, the new view runs counter to very old opinions expressed and acted on by writers and the general public in all ages, that the dark livid-green of certain plants points to their poisonous properties; an opinion expressed by Pereira, who refers to the "dark lurid aspect of the Belladonna plant, as indicative of its deadly narcotic quality."—*London Pharm. Jour. Jan.* 1862.

ON SOME VARIETIES OF TANNIN.

By John Stenhouse, LLD., F.R.S., F.C.S.

In two communications "On some Astringent Substances as sources of Pyrogallic Acid," read before the London Chemical Society in the years 1842, 1843, I showed that the usual division of the varieties of tannin into two genera—to wit, those which give black, and those which give green precipitates with salts of iron—though called in question by Berzelius, is still well founded: and likewise, that these two genera consist of a great variety of species, which, though closely resembling each other in properties, are still dissimilar in nature; the only instance in which the same species of tannin had been procured from two different plants, being those of nut-galls and sumach. Professor Strecker's important observation made some seven years ago, that grape-sugar is produced when the tannin of nut-galls is boiled with dilute sulphuric acid, seemed to render a further examination of the varieties of tannin desirable.

Sumach.

As the tannin of sumach cannot be obtained in such a high state of purity as that of nut-galls by Pelouze's ether process, I was obliged to employ other methods by no means so satisfactory, but which still yield a tolerably pure tannin. A strong decoction of sumach was therefore treated with acetate of lead, which threw down a pale yellow precipitate. This was washed by decantation, and then decomposed by sulphuretted hydrogen and filtered; the filtrate having been boiled with dilute sulphuric acid, on standing for some time, deposited crystals of impure gallic acid. These were collected on a filter, and the mother-liquor,

when neutralized with chalk, gave abundant indications of sugar, both by Trommer's test and when subjected to fermentation. A second decoction of sumach, when cold, was treated with sulphuric acid, which threw down a copious precipitate; this, when boiled, was also resolved into gallic acid and grape-sugar. This reaction, therefore, in addition to former experiments, serves to confirm the identity of tannin in oak-galls and sumach.

When sumach is long kept, the tannin it contains appears to be resolved, in a great measure, into gallic acid and grape-sugar, owing to its undergoing a species of natural fermentation. Accordingly, under these circumstances, when simply boiled with water, sumach emits an odor resembling that of tea, and yields a large quantity of sugar and gallic acid, but mixed with much impurity. Sumach, therefore, though it contains much gallic acid, owing to the impurities present in it, is not a good source of that acid.

I may also remark, that the amount of tannin in sumach varies considerably, some specimens being very rich and others very poor. This probably arises from the circumstance that the sumach of commerce is the product of various kinds of *Rhus*, such as *Rhus cotinus*, *Rhus coriaria*, &c.

Chinese Galls.

These singularly-shaped galls, which are angular and slightly translucent, have been imported into this country in small quantities for the last fourteen or fifteen years. They are said to be found on the branches of a plant which grows in Japan. From the small amount of the coloring matter they contain, Chinese galls are greatly preferred for the manufacture of gallic acid. Oak-galls, on the other hand, are the best source of pyrogallic acid. The decoction of Chinese galls gave a copious white precipitate with acetate of lead. This was decomposed by sulphuretted hydrogen, and filtered; the clear liquid, when boiled with sulphuric acid, was resolved into gallic acid and grape-sugar, as in the two preceding instances. Another portion of the filtered liquid was evaporated to dryness, and destructively distilled. It yielded a very large quantity of pyrogallic acid. It is clear, therefore, that gall nuts, Chinese galls, and the various kinds of sumach, contain the same species of tannin.

The Tannin in Tea.

The tannin both of green and black tea is invariably accompanied by a small quantity of gallic acid, which does not arise from the decomposition of the tannin in the tea, as is the case with nut-galls, sumach, or Chinese galls. On treating a strong decoction of tea, when cold, with nearly half its bulk of sulphuric acid, the tannin falls as a dark brown precipitate. This was collected on a cloth filter, strongly compressed, and washed with a little cold water to free it as much as possible from adhering impurities. The precipitated tannin, when boiled with dilute sulphuric acid, did not yield a trace either of grape-sugar or gallic acid, but was changed into a dark brown substance nearly insoluble in water. It dissolved pretty readily in alcohol, forming a dark brown solution, from which, however, no crystals could be obtained.

Oak-bark from Quercus pedunculata.

A decoction of oak-bark gave a dark brown precipitate with acetate of lead. This was decomposed by sulphuretted hydrogen. The filtered solution, when boiled with sulphuric acid, yielded grape-sugar and a reddish brown precipitate, but no gallic acid. The reddish brown precipitate dissolved with difficulty in spirit of wine, but gave no crystals on standing. Rochleder has stated that tea and oak-bark contain the same species of tannin. They certainly resemble each other in their general characters; but as the tannin of oak-bark yields sugar when boiled with dilute sulphuric acid, while that of tea does not yield a trace of sugar, it is clear that the two tannins are not identical.

Valonia, the acorn of the Quercus Ægilops.

This species of tannin, which has a bright yellow color, when treated in the way already described, yielded sugar, but no gallic acid.

The tannin of pomegranate rind also gave abundant indications of sugar, but no gallic acid.

The tannin of Myrobalans, the fruit of *Terminalia Chebula*, gave similar results.

Tannins which give green precipitates with persalts of Iron.

Salix triandra and *Salix undulata* (the willows generally used for basket making).—A quantity of the bark of these two wil-

lows, when boiled with water, yielded a dark brown solution. This, when treated with acetate of lead, gave a copious precipitate of a brownish-yellow color. This lead-salt was decomposed by sulphuretted hydrogen; and the clear filtered liquid, when boiled with sulphuric acid and then neutralized with chalk, gave abundant indications of grape-sugar. Another portion of the solution from the decomposed lead-precipitate, when digested with nitric acid, yielded only oxalic acid.

When a decoction of willow-bark is boiled with dilute sulphuric acid, the brown colored liquid becomes very red, and a flocculent brownish-red precipitate falls, which is nearly insoluble in water, but dissolves pretty readily in hot spirit of wine and alkaline leys. The brownish red precipitate, when dissolved in spirit of wine and left to spontaneous evaporation, did not crystallize, but formed a dark brownish resin. It consisted chiefly of impure saliretine, resulting most probably from the decomposition of salicine in solution. When it was digested with nitric acid, it yielded a good deal of nitropicric acid. Willow-bark, therefore, is a tolerably good source of this acid.

Alder-bark (Alnus glutinosa).—Alder bark yields a dark red decoction with water. It was precipitated with acetate of lead, and the lead-salt decomposed with sulphuretted hydrogen. It formed a dark red solution, which on digestion with sulphuric acid yielded no sugar.

Catechu.—It was the light-colored cubical variety of catechu that I employed. The tannin from this astringent substance, when digested with dilute sulphuric acid, yielded no sugar, a result which corresponds with Neubauer's experiments (*Ann. der Chem. und Pharm.*, vol. xcv., p. 103.)

Larch-bark (Pinus larix, *Linn.*).—The bark of the larch is employed in Scotland to some extent in tanning, though the leather made with it is inferior in quality. Larch-bark contains a good deal of a peculiar tannin, which yields olive-green precipitates with salts of iron. The aqueous solution of larch-bark is strongly acid to test paper, and has at first a pale yellow color, which exposure to the air renders brownish-red. Acetate of lead threw down a copious yellow precipitate; this was decomposed by sulphuretted hydrogen and boiled with dilute sulphuric acid, when the liquid assumed a fine scarlet color, like infusion of Brazil-

wood. The altered tannin precipitated on cooling in beautiful red flocks, as it is but little soluble in cold water. It is very soluble in alcohol, and its solution has a rich scarlet color, which is characteristic of this species of tannin. Its alcoholic solution, when left to spontaneous evaporation, did not yield crystals, but formed a dark resinous mass. The clear liquid from which the red flocks were precipitated, when neutralized with chalk, gave no indications of sugar. Sugar, however, together with a good deal of mucilage and resinous matter, with some larixinic acid, is contained in the crude decoction of larch-bark.

Bark of the common black Mangrove (Rhizophora Mangle *of botanists*).—This species of mangrove-bark is used in tanning, and is occasionally imported into Great Britain for this purpose. It has a brownish-red color: the color of its decoction is the same. The tannin it contains is precipitated from its solution both by acetate of lead and concentrated sulphuric acid. When boiled with dilute sulphuric acid no sugar is produced, and the brownish-red precipitate which falls cannot be made to crystallize.

In conclusion, I would observe that it is somewhat remarkable that so many of the tannins which give bluish-black precipitates with persalts of iron are glucosides; whereas of those which give olive-green precipitates with persalts of iron, so far as I know, only one—to wit, the tannin of the willow—is a glucoside.—*Lond. Pharm. Jour., Dec.* 1861, *from Proc. Royal. Soc.*

ON THE ACIDS AND RESIN OF BENZOIN.

Since Messrs. Kolbe & Lauteman's paper on the acids of benzoin (see page 220, vol. ix. Am. Jour. Ph.) announcing the presence in the benzoin of Sumatra, of toluylic acid, these chemists by new researches have satisfied themselves that the acid in question is not that acid, but a compound of two parts of benzoic and one part of cinnamic acid.

It is easy to be assured of the presence of this last acid by boiling the benzoin with milk of lime, filter, precipitate by chlorohydric acid, and add permanganate of potassa. If cinnamic acid is present, an odour of oil of bitter almonds is produced, resulting from the reduction of that acid.

These two acids are always met with in the same proportions

in the different varieties of resin of benzoin. It is this fact that has led the authors to believe that they have found it in a state different from simple mixture.* The combination is never intimate because it can be undone not only by fractional precipitation, but by simple crystallization.

Finally, the fusing point of this acid is 26° C. below that of benzoic acid (120° C.), and M. Aschoff has found that a little cinnamic acid will modify greatly the fusing force of the benzoic.

The complete separation of these acids has been effected by way of fractional precipitation, by means of nitrate of silver acting on the ammoniacal salt.

M. Aschoff has since found cinnamic acid exclusively present in the almonds-like tears of a benzoin of Sumatra, which had a strong odor of storax. These almonds were in greater part soluble in ether, the solution contained cinnamic acid 11 per cent; resin soluble in alcohol 78 per cent; foreign matter 4·5 per cent. At the most there was but 5.4 per cent of resin insoluble in ether and soluble in alcohol.—*Annal. der Chem. and Journ. de Pharm. Nov.*, 1861.

ON THE ADULTERATION OF TIN FOIL.

By Mr. J. H. Baldock.

Having occasion a short time back to prepare some compounds of tin, I employed for the purpose, in the absence of granulated metal, some tin foil, and was surprised to find my product very largely contaminated with some other metal. Upon careful examination of the tin foil which I had used, I found it

* (Note by M. J. Nickles.)—Benzoic and cinnamic acids belong to the same homologous series of aromatic acids; in view of their composition they are related as the acetic and butyric acids.

Acetic acid	$C_4 H_4 O_4$
Butyric	$C_8 H_8 O_4$
Benzoic	$C_{14} H_6 O_4$
Cinnamic	$C_{18} H_8 O_4$

As has been shown in this Journal (Jour. de Pharm. xxxiii. p. 351) how the two first can combine to form butyro-acetic acid, $C_6 H_6 O_4$, so benzo-cinnamic acid of MM. Kolbe & Lauteman is a combination of the same kind, and not more stable than the first.

to contain a large amount of lead. Believing that the presence of this metal in such considerable quantity in the foil is not generally known and recognized, I obtained a number of specimens of commercial foil and submitted them to analysis. Some of these were kindly supplied to me by Mr. Haselden, of Conduit Street, the remainder being collected by myself. They consisted of—1. Ordinary commercial foil; 2. Embossed foil; 3. Tinned paper; and 4. Foil lining the packets of Horniman's tea; together with a sample of 'Pure Tin Foil' from Mr. Saddington's, and some of Betts' Patent Capsules. The following table of the results of the analysis in the several cases will show the proportion of lead and tin present in the different samples. The processes employed will be subsequently described.

	1	2	3	Pure Foil	Betts' Capsules.
Lead	86·93	76·57	88·665	34·375	84·56
Tin	13·06	23·42	11·345	65·625	15·46
	99·99	99·99	100·000	100·000	100·02

It thus appears that tin foil is such only in name, though the reason of this large admixture of lead is not very apparent, because the so-called pure foil noticed above, which contains a much smaller proportion of lead, appears to be in every respect better suited to general requirements, being at once thinner, lighter, and tougher. The only cause that I can assign is, that the alloy may be more easily rolled than the pure metal. I may remark that the sp. gr. of the alloy is less than would be indicated by calculation from the sp. gr. of the two metals. In Gmelin's Work a table is given, showing the actual and calculated and specific gravities of these two metals when alloyed in different proportions.

Not long since there was a great deal said respecting the packing of tea, tobacco, snuff, etc., in *lead* foil, as in several instances accidents had occurred, owing, as it was then shown, to the formation of a subcarbonate of lead, which was disseminated through the contents of the packet; and, if I recollect rightly, it was suggested that *tin* foil should be substituted for that made from lead. If it is true, however, that tin foil is itself so extensively adulterated with lead, it is obvious that no advantage

would be gained. On the contrary, such an alloy is more easily acted upon than either of its components would be alone. Some time back I noticed on some foil, which had been in contact for some time with a packet of acid paper for Seidlitz powders, evidence of corrosion or chemical action, and the presence of lead was shown by the resulting compound blackening in the presence of HS.

For simply detecting the presence of the lead, I found the readiest method to consist in oxidizing the foil with nitric acid, and to dissolve out the nitrate of lead from the insoluble peroxide of tin with hot water. Crystals of the salt were generally deposited from the solution on standing. For the quantitative estimation of the two metals, I have tried several processes, with varied degrees of success.

First, dry chlorine gas was passed over the foil, heated in a bulb tube, when the volatile bichloride of tin distilled over, leaving the fixed chloride of lead in the bulb. This process was not, however, adopted, for two reasons: 1st, because some difficulty was experienced in condensing the whole of the distillate; 2dly, and most important, that some of the foil at the termination of the process fused and escaped the action of the gas.

Secondly, the foil was treated with nitric acid, sp. gr. 1·37, whereby the tin became converted into the insoluble binoxide, and the lead into nitrate; the latter was dissolved out by water, the lead precipitated as sulphate, which was washed, dried, and calcined, and from which was calculated the amount of the metallic lead; the binoxide of tin was also washed, dried, and calcined, and the amount of metallic tin calculated from it; this process is simple, expeditious, and appears to give very good results.

Thirdly, the foil was treated with nitric acid, and evaporated nearly to dryness, with a small excess of sulphuric acid, whereby the two metals were converted into sulphates; the nearly dry residue was then washed with water, and digested repeatedly with solution of acetate of ammonia of sp. gr. 1·06 or above, which dissolved out the whole of the sulphate of lead. Sulphide of ammonium was added to the solution, and the precipitated sulphide of lead washed, and reconverted into sulphate by heating with a mixture of nitric and sulphuric acids, and from this

the metallic lead was calculated as before: the sulphate of tin was then calcined to convert it into binoxide, from which the metallic tin was calculated. There appears to be no objection to this process, except that it is rather long, as it gives very good and accurate results; it has, moreover, the merit of simplicity. The annexed table gives at A the results of the second process upon sample No. 1; and at B the results of the third process upon the same sample:—

	A.		B.
Lead	85·52	Lead	84·84
Tin	14.12	Tin	15·06
	99·64		99·90

Both these, it will be observed, estimate the lead a little too low, arising from insufficiency of washing, some time being required to complete that part of the process.

The process, however, which I found to give me by far the best results, and to be the most convenient in execution, is one described by Rosé. It consists in fusing the alloy with an excess of a mixture of sulphur and carbonate of soda. The metals combine with the sulphur to form sulphides, while at the same time the sulphur and carbonate of soda react to form sulphide of sodium. The sulphide of tin combines with the alkaline sulphide, forming a soluble compound, while the sulphide of lead remains unaffected. The fused mass is digested with water, and filtered. The insoluble sulphide of lead is washed, dried, and calcined with a mixture of nitric and sulphuric acids, whereby it is converted into sulphate, from which the lead is calculated as in the previous cases; to the filtrate excess of hydrochloric acid is added, which decomposes the sulphur compounds, and precipitates sulphur and the sulphide of tin; the precipitate is washed, dried, treated with nitric acid, and calcined, when binoxide of tin results, from which the metal is calculated.—*Lon. Pharm. Jour. Jan.* 1862.

ACTION OF WATER ON COMMERCIAL CHLORIDE OF LIME, AND REMARKS ON ITS CHEMICAL CONSTITUTION.

By M. Fresenius.

It is generally admitted that chloride of lime is composed of a mixture of hypochlorite of lime, chloride of calcium, and hy-

drate of lime; or a combination of hypochlorite of lime with chloride of calcium, mixed with hydrate of lime. M. Millon, on the contrary, considers it to have the composition CaO,Cl. The author thought that the action of water on chloride of lime would throw some light on its constitution.

The chloride of lime employed for analysis was taken from a large sample of 250 kilogrammes. It yielded 26·52 p. c. of chlorine, and 13·25 p.c. of hypochlorous acid. To estimate the whole of the chlorine a weighed quantity was treated with water and ammonia, nitric acid added, and the solution then neutralized by carbonate of soda. The chlorides were then estimated in the liquid by nitrate of silver. By the volumetric process with bichromate of potash, 29·57 p. c. of chlorine was found.

The lime was precipitated by oxalate of ammonia. Two analyses yielded 46·35 p. c. and 46·40 p. c. Mean = 46·37 p. c. From these numbers the following composition is calculated:—

CaO,ClO	26·72
CaCl	25·51
CaO	23·05
Water	24·72
	100·00

Which may be thus stated:—

CaO,ClO	26·72
CaCl (in combination with the above as CaO,ClO + CaCl)	20·72
CaCl in excess	4·79
CaO,HO	30·46
Water combined	17·31
	100·00

The author has verified this composition in the following manner:—

A weighed portion of chloride of lime was treated with a known volume of hydrochloric acid. The reaction was conducted in a flask furnished with a long glass tube to avoid loss of the acid. The difference in strength of the hydrochloric acid before and after the experiment showed the quantity of acid saturated by the lime. This was found to be equivalent to 57·206 of anhydrous acid for 100 of the chloride. This closely

approximates the amount required by theory. The reaction is as follows:—

$$CaO,ClO + CaCl + 2HCl = 2CaCl + 2HO + 2Cl.$$

26·72 of hypochlorite and 20·72 of chloride of calcium being present in 100 parts of chloride of lime, there would be then 47·44 p. c. of chloride of lime, requiring 27·24 of hydrochloric acid, the 30·46 of hydrate of lime requiring also 30·01 of acid, making 57·25 together. Experiment gave 57·206.

The lime of the 4·79 of chloride of calcium, not having been saturated by the acid, would remain in excess.

50 grammes of chloride of lime were treated with ten successive gradually increasing portions of water. 80 grammes of water were employed for the first lixiviation; the mass being thrown on a filter, 20 grammes of filtrate were obtained; a second lixiviation yielded 30 grammes of solution; a third, 100; a fourth 120, etc. The results are shown in the table below.

These solutions were analyzed immediately after filtration to avoid as much as possible the action of the air. The chlorine and hypochlorous acid were estimated as before; the same estimations were also made in the deposit remaining after the tenth washing. The following numbers were obtained:—

Solution.	CaO,ClO	CaCl.	Atoms of CaCl for 1 atom of CaO,ClO.
1 . . .	4·5371	15·9437	4·5279
2 . . .	5·2254	7·6451	1·8851
3 . . .	3·6968	2·6064	0·9084
4 . . .	1·6004	0.9897	0·7968
5 . . .	0·4672	0·2971	0·8193
6 . . .	0·1600	0·1198	0·9647
7 . . .	0·0602	0·0487	1·0422
8 . . .	0·0128	.	.
9 . . .	0·0060	0·0067	1·4319
10 . . .	0·0039	0·0043	1·4521
Residue . .	0·1389	0·0321	0·2981

The following conclusions are drawn from these experiments:

1st. The first portion of water (80 grammes) dissolved all the chloride of calcium, as the last portions contained very little.

2d. The hypochlorite of lime, on the contrary, entered gradually into solution.

3d. At the end of the third lixiviation all the free chloride of calcium was dissolved; for from this time the proportion between the hypochlorite of lime and the chloride of calcium became nearly regular.

4th. As the chloride of calcium dissolves at once completely, while the hypochlorite dissolves principally after the third lixiviation, it results that either these two bodies are in combination, or that the water decomposes chloride of lime into hypochlorite and chloride of calcium.

5th. The author considers that the hydrate of lime is combined with the chloride of calcium, forming a basic chloride. This would explain the reason why 4 atoms of hydrate of lime take 2 atoms only of chloride. This opinion is supported by the fact that the crystalline compound $3CaO,CaCl+16HO$ is decomposed by water into hydrate of lime and chloride of calcium.

6th. The author assigns to chloride of lime the following formula:—

$$CaO,ClO+CaCl,2CaO+4HO.$$

7th. The hydrate of lime separated when the chloride of lime is treated with water, retains with great force a certain amount of hypochlorite which repeated washings will not remove. In estimating exactly the hypochlorous acid in chloride of lime, it is necessary, therefore, to value the deposit with the solution. For commercial purposes, however, it is better to assay the clear solution filtered from the deposit, as that alone is employed, the deposit being usually rejected.—*Lon. Pharm. Journ. Jan.* 1862, *from Répertoire de Chimie.*

ON THE PRODUCTION OF NITRATE OF SODA AT IQUIQUE (PERU.)

As Iquique is the centre of this trade, and to it its present importance is wholly to be attributed, it is thought to be advisable to convey in this report as much information as can be procured as to this article, and in order that such information shall be truthful, the writer has availed himself of the views of several Englishmen at present engaged in the trade.

About from six to fourteen leagues from the coast, and run-

ning parallel with it through the province, at an elevation of 3300 feet, or there about, is the Pampa of Taramugal. This plain or pampa was a sea lake, and the greater part is covered with salt along the western border; and generally not extending eastwards more than 500 yards to the verge of the old lake is found the "caleche" or "terra salitrosa," rough nitrate. Between the pampa and the coast exist other old sea lakes, on the borders of which "caleche" is also found; but these deposits are of secondary import. The "caleche" is generally found in insulated masses, irregular in shape and thickness, which adds greatly to the expense of working. It is sometimes found with only a few inches of sand over it, but more frequently covered with a hard stone, consisting of sand indurated with salt; this is called "costra," the thickness of which varies from one to ten feet, but averages three feet. The "caleche" varies in thickness from one to nine feet, but in general runs from three to four feet; below this exists a soft sand, containing an abundance of crystals of glauberite and small quantities of borates of lime and soda. The strata consists of—

1. Loose sand, a few inches thick.
2. Hard sand, indurated with salt, from one to ten feet thick.
3. "Caleche," from one to nine feet thick.
4. Soft sand or cora.

The "caleche" varies in quality from nearly pure salt to 50 and 60 per cent. of nitrate, generally containing the following substances: Earthy matter, Nitrate of Soda, Chloride of Sodium Sulphate of Soda, Sulphate of Lime, and traces of Chloride of Magnesium, and Iodides and Bromides.

It is impossible to state the respective proportions, as they vary with every different sample. The method of extracting and refining nitrate of soda is as follows:—

When "caleche" is required, the barretero (miner) makes holes in the ground where he expects to find it. If successful, he fills up the holes with coarse gunpowder made on the spot (costing three and a-half dollars per quintal), regulating the charge in proportion to the thickness and hardness of the "costra" and the thickness of the "caleche;" the charge varies from one to eight quintals, and occasionally as much as fourteen quintals; when blasted the whole mass is turned over and mixed.

He then proceeds to separate the "costra" and "cora" from the "caleche," throwing aside all the latter that he does not believe to contain more than ten or twelve per cent. of nitrate; it is then broken into smaller lumps, to be conveyed to the "paradas." A refinery of nitrate is called an "Officina," and is generally placed in the centre of the calecheros or nitrate grounds, and consists of one or more paradas; a paradas is a pair of round iron boilers, each holding from 70 to 300 gallons; these are placed together, in rough stonework, with a fire-place between them. At the parada, the acendrador breaks the lumps into pieces about the size of a fist, and rejects the inferior pieces, so as to bring the whole to about 25 to 34 per cent. of nitrate. It is now thrown into the boilers with a quantity of water; after boiling some two or three hours, the fondeador (boiler) continually stirring the mass, supposing that the caleche is by that time exhausted, throws out the ripio (refuse,) adds more caleche and mother water; and, after boiling some two or three hours, a well saturated solution is obtained; it is then by hand baled into a deposit, from whence, as soon as the mud and salts are deposited, it is baled into shallow coolers, where it crystallizes. The mother water is then drawn off, and the nitrate thrown out to dry. The paradas are charged twice a-day, and the daily product is from fifteen to twenty quintals of nitrate, containing about 3 per cent. of impurities, chiefly common salt. The average cost of a quintal of nitrate is:—

Barretero, breaking out	12½ cents.
Acendrador, assorting	6¼ "
Fondeador, boiling	12½ "
Powder for blasting	6¼ "
Asses bringing the caleche to the paradas .	3 "
20 lbs. coals at $1.50 per quintal . . .	30 "
Wear and tear of parada, reparations, and depreciations	29½ "
	$1.00

This system of making nitrate is the same as was first adopted at the commencement of the trade, and unquestionably well adapted for that early period, having the advantage of being simple, easily understood and worked; yet it is still continued

and the whole system of labor arranged to it. It is almost impossible to conceive a system more rude and more wasteful; and although many exertions have been made during the past ten years, without success, to improve it, yet that want of success has been caused chiefly by the lack of skilled labor in the province; still there is no doubt that it will be superseded, in the course of a few years, by the more refined and complicated apparatus now being introduced. The theory of the process of refining nitrate is this:—"Caleche" consists of nitrate of soda, chloride of sodium (common salt), and earthy matter, (the other substances present exist in such small quantities that they are overlooked); and as chloride of sodium is very little more soluble in boiling than in cold water, whilst nitrate of soda is comparatively insoluble in cold, but very soluble in hot water, it is very evident that it is only required to add such quantities of "caleche" to boiling water to procure a strongly saturated solution; the earthy matter, being insoluble, is left with the excess of common salt in the boiler, or the deposit, before it is discharged into the coolers, where, as the liquid cools, it deposits the excess of nitrate of soda, the mother liquor retaining all the salts in solution. Reverting to the customary process of refining, two systems are now being tried, which use steam; in the one (Gamboni's patent) the "caleche" is placed in an inverted semi-cone, with a perforated cover and bottom; through the side a jet of steam is introduced, mother water is thrown on the cover, and the refined nitrate falls through the bottom, and is at once conveyed to the coolers; in the other, steam is introduced to boil the solution; but both promise the same advantages—economy in the make, and a superior article.

No sketch of the nitrate trade would be complete without some reference to the abuses. In the first place, it is badly based. The merchant makes advances to the soliteros, officineros (makers), of money and goods, on the promise of receiving in return the product of the officina. This advance frequently is used in paying off old debts, or in advances to the laborers. The merchant must still keep advancing barley for the troops, coals and provisions for the laborer, &c., or there will be no nitrate forthcoming. This system trenches heavily upon the merchant's resources, and occasionally leads to losses.

The officineros, as a body (with some exceptions,) are a reckless set of men, wasteful in their expenditure and careless of their promises. Their arrangements with their laborers are also bad; their principal ones, the barretero, acendrador, and fondeador, being paid according to the product of the parada, recriminations are ever recurring, and not unfrequently leading to a closing of the works. Another thing must also be noticed—the great amount of adulteration that has taken place within the three past years. Rarely a cargo leaves that is better than 5 per cent., some even 7 to 10, and some samples assayed have shown as much as 30 to 50 per cent. of foreign matter. The adulteration is effected in two ways; in one, white "caleche" is ground and mixed with the refined nitrate,—this is called green nitrate: the other, the powdered "caleche," is mixed into the solution, and at once put into the coolers,—this is dirty nitrate. This is in some measure protected by the present state of the trade. Merchants in England purchase from the importer, and get a deduction from him corresponding to the amount of foreign matter in the article; but as the general sales are made without any deduction, then the worst cargoes are the most profitable to the merchants.

The province has not been thoroughly surveyed; but enough "caleche" has been discovered to yield an increased supply for ages. In May, 1856, there were about 100 officinas at work, with about 250 paradas; but the work is not constant, 240 days is a good year's work. The principal sales of this article are made in Valparaiso, on the usual terms, viz., ore well sacked, not to contain less than 95 per cent. of nitrate placed in the ship's launch outside the surf. The price has been very fluctuating, commencing at 18 reals, rising to 20 reals, falling to 16 reals, and then in four months rising to 23 reals, but taking an average price of 19 reals, 936,719 quintals, with the exchange at 46 dollars, would give 426,402*l.* 5s. 10½d. The other salts found in the province are chloride of sodium, biborates of lime and soda, sulphates of lime and soda, magnesian alum, &c. Iodine exists with the nitrate, and throughout the calecheros traces of boracic acid have been found in the water.—*Chem. News, London, Jan.* 18, 1862, *from the Report of H. B. M. Consul.*

ON THE INFLUENCE OF CULTIVATION UPON MEDICINAL PLANTS.

Some correspondents have recently expressed to us their belief, that extracts made from herbs growing wild keep better than those prepared from the same plants in a cultivated condition. As this is a point of great interest, and one which has an important bearing upon the preparation of medicinal extracts, we subjoin the following translation from *L'Union Pharmaceutique*, of a Report recently presented to the Imperial Society of Medicine of Toulouse, *On the influence of cultivation upon Medicinal Plants*, by M. Timbal-Lagrave.

"At the present time, it is scarcely necessary to insist upon the advantages to be derived from a knowledge of botany, and the important applications of such knowledge in the treatment of disease. Whilst we thus admit the importance of an acquaintance with the medicinal properties of plants, we must acknowledge, however, that it is not so easy to ascertain with certainty under what condition medicinal plants should be chosen and collected. Although many authors have written treatises on Therapeutics and Pharmacology, we are far from knowing, as yet, the principles which ought to be acted upon in the choice and collection of medicinal plants. The greater number of writers recommend that such plants should be collected in those places where they grow wild, under the belief that if they are removed from their natural habitats, they will but rarely find in their new ones those conditions which are necessary for their complete development; and that, hence, they will languish, become sickly, and will not possess in the same degree the properties which they had in their natural states, and the medical practitioner would therefore have to deal with doubtful and variable agents, in which he could place no confidence.

"It must not be imagined that this decision in favor of wild plants has been arrived at hastily, or without proofs: on the contrary, it rests on certain scientific data, which the labors of modern physiologists have confirmed. Thus, if we cast an attentive glance upon the distribution of plants over the surface of the globe, we shall be struck at once with their number and variety; and if we search for the cause of such variety

and for the evident preference of certain plants for particular localities, we shall see that they obey those influences in which heat and light have the greatest share; it is in fact by them that the seasons affect the climates, which have, in their turn, so powerful an action upon vegetation. It is heat and light which increase or diminish the respiration, circulation, absorption, and exhalation of plants; in fact, it is to their influence that vegetable secretions owe their peculiar tastes and odors. A plant, says M. Alph. de Candolle, is a living machine working under the influence of two external agents, heat and light, and one internal, life. He observes, at the same time, that the old botanists ascribed to these two agents a still greater influence, for they looked upon plants as thermometers, the degrees of which were marked by the phenomena of vegetation.

"It is also by heat and light that we explain the preference of some plants for certain latitudes, certain climateric zones which they do not go beyond; it is also by them that we account for the presence of a great number of species at particular heights above the level of the sea, from whence they neither ascend nor descend without destroying themselves or their progeny. It is also to these two agents that we must attribute the fructification of certain species in a given spot, a fructification which cannot be produced if such plants be placed in colder regions; such are, for example, the olive, jujube, etc.

"To these and other causes of a purely physical character, we might add those of a chemical nature, for although these have been altogether denied by some writers, they have, nevertheless, a great influence upon the distribution of plants over the earth. All botanists, for instance, know the preference of certain species of plants for silica, chalk, etc.; of others, for mixed rocks and gravel, etc. Those species, again, which inhabit swampy or turfy ground; those which select stagnant and warm waters, or those which choose running and cold streams; and those which spring up in the woods, meadows, or upon walls, ruins, etc., are not placed in such situations by chance and without appreciable causes. Again, without referring to parasitic plants, examples of a more extraordinary predilection have been noticed,—such, for instance, as are presented to us by alternating plants—namely, those which appear in certain soils for one or two years,

then disappear to return again and again disappear; thus obeying some particular physical and chemical influences which are necessary for their development.

"The study of the physical and chemical causes which are concerned in the distribution of plants over the earth constitutes the science of Botanical Geography. It is upon the data furnished by this science and upon some very conclusive physiological experiments that the selection of medicinal plants should be based if we desire to obtain efficient remedies; such, at least, is the design of pharmacologists when they advise the employment of wild plants, for they think that when they are obtained growing under other conditions, that is, when in a state of cultivation, they have lost a great portion of their medicinal properties.

"It is unnecessary for us to refer here to the various modifications which the use of simples in medicine have undergone, or to the value of the more or less whimsical notions which led to the mixture of many obscure remedies with those of undoubted medicinal value. It is sufficient for us, at the present time, to show that a great number of plants do possess valuable medicinal properties, which render their use of great importance in the treatment of many diseases; and that, from their frequent and daily employment, a great increase in the commercial value of several of them has resulted. Hence has arisen the idea of submitting such plants to cultivation in the same way as is done on a large scale with those species which are employed for food or forage. Such attempts were at first made on a small scale, but in a short time horticultural establishments arose on all sides in which were cultivated all our indigenous plants employed in medicine, from the digitalis, belladonna, aconite, etc., to the mullein and common red poppy. These productions, more developed, more fattened, if I may so speak, by cultivation, sell, on account of their better appearance, etc., at much higher prices than the same obtained in a natural state.

"In these establishments all the plants are grown together without any previous investigation as to whether the soil be favorable or otherwise; whether the situation will injure the development of their active principles, or whether the height of position which these plants prefer will not result in modifying

their properties; nothing of all these matters is considered. Those persons who make such speculations are most frequently strangers to the pharmaceutical profession, do not suspect the importance of these questions, nor the great injury they cause thereby to the public health; they sell their productions as gardeners sell their vegetables; the profit they obtain largely repays them for their labors; they have attained their object; they care for little beyond, they are not responsible for the injury produced. Nor is this all, for, to increase the profit as much as possible, they subject some plants, such as peppermint, balm, belladonna, stramonium, to the same periodical cutting as is practised in the cultivation upon a large scale of forage plants in our fields, without considering in the least whether such a treatment, which does not give the plants time for elaborating their active principles, will not considerably impair their medical properties. We have known, since the time of Daubenton, that the young shoots of aconite and hemlock may be eaten with impunity, while the full-grown and mature plants of the same species are poisonous. We know also that many labiate plants, such as mint and balm, contain most bitter and volatile principles when in flower.

"Thus, the scientific edifice upon which *materia medica* rests is falling to decay; it is thus that the minute observations amassed during many ages of experience by learned men who have sacrificed their time and their labors to the relief of humanity, disappear.

"Taking the above facts into consideration, the Society, whose organ I am this day, has decided to put to the assembly the subject: *Of the influence of cultivation upon Medicinal Plants.* We are especially desirous that to the data already acquired by science and well known to all, may be added chemical, pharmaceutical, and clinical experiments, in order to determine in a material and irrefragable manner the real and comparative values of wild and cultivated plants, so as to put an end to the vagueness and confusion which the practitioner meets with when he wishes to employ any medicinal plant. It is on this ground that the Society invites practitioners desirous of proving their zeal for science, to lend the support of their experience to therapeutics and pharmacology, in order to enlighten the medical

world upon a state of things which tends to lead the physician astray, as well as to compromise the health of his patients."

In presenting the above abstract to our readers we must beg them to notice that we do not endorse all the statements therein made; those more particularly which have reference to the cultivators of medicinal plants in France, are most certainly not applicable to the very intelligent body of men who devote their time, abilities, and money to the cultivation of such plants in this country. Nevertheless, the paper is eminently suggestive, and the statements of its author should be carefully considered by all who take an interest in the growth of medicinal plants. The opinion entertained upon the comparative medicinal activity of wild and cultivated plants by the framers of the London Pharmacopœia is, "that the herb which grows spontaneously in hedges and in uncultivated places, is to be preferred to that cultivated in gardens." At present, however, it must be admitted that no satisfactory evidence can be adduced of the greater activity of wild plants; indeed, Dr. Christison states, that "from experiments made some years ago at the Royal Infirmary in Edinburgh, with henbane, the inferiority of cultivated plants, if it exists at all, seems not appreciable in practice." According to Mérat, however, the superior activity of wild henbane has been demonstrated in Germany. Further experiments upon the comparative activity of wild and cultivated herbs are therefore required before we can arrive at any positive conclusions upon the subject. With regard to valerian, however, we entertain no doubt as to the greater activity of the wild herb.

The following extract from *Bentley's Manual of Botany*, page 785, has also direct bearings upon the matter in question. Thus, after alluding to the effects of the varying intensity of heat, light, etc., upon the formation of the secretions of plants, Professor Bentley says:—"At present, much remains to be discovered before we can be said to have anything like a satisfactory explanation of the causes which influence the formation of the secretions of plants; for it is found that the same plants when grown in different parts of Great Britain, where the climatal differences are not strikingly at variance, or even at the distance of a few miles, or in some cases a few yards, frequently vary much as regards the nature and activity of their peculiar secretions. A striking illustration of this fact is mentioned by Dr.

Christison, who found that some umbelliferous plants, as *Cicuta virosa* (Water Hemlock), and *Œnanthe crocata* (Hemlock Water Dropwort), which are poisonous in most districts of England, were innocuous when grown near Edinburgh. The causes which lead to such differences are at present obscure, but the varying conditions of soil and moisture under which such plants are grown, have doubtless an important influence upon their secretions. In a pharmaceutical point of view, so far as the active properties of the various medicinal preparations obtained from plants are concerned, this modification in the secretions of plants by such causes is of much interest, and would amply repay investigation, for it cannot be doubted but that each plant will only form its proper secretions when grown under those circumstances which are natural to it, and that consequently any change from these conditions will modify to some extent the properties of the plant. I cannot but believe that here we have an explanation, to some extent at least, of the cause of the varying strength of medicinal preparations obtained from plants grown in different parts of this country, or in different soils, etc."

If future experiments should demonstrate in a conclusive manner that wild plants are more active than those under cultivation, it will be necessary to ascertain what are the conditions of heat, light, exposure, soil, moisture, etc., which are most favorable to the full development of the medicinal properties of each plant, in order that the cultivator may place them, as far as he is able, under such conditions. Many of our medicinal plants are now employed so extensively that they could not be obtained in any proportion to the demand for them from wild localities, and hence cultivation must be resorted to to keep up the necessary supply. In conclusion, we would urge upon our cultivators of medicinal plants to study to place the plants they cultivate, in as nearly as can be ascertained at present, their natural condition, and then we have no fear that their medicinal properties will be sensibly diminished; indeed, we see little reason to doubt, that as our knowledge of vegetable physiology and chemistry increases, when the conditions under which the different secretions of each particular plant have been thoroughly investigated, we may increase rather than diminish their active properties by proper cultivation.—*London Pharm. Journ.*

Abstract of the Minutes of the Philadelphia College of Pharmacy.

The Forty-first Annual Meeting was held 31st of Third month, 1862, at the Hall of the College. Present, 23 members.

The President in the Chair. The minutes of the last meeting were approved.

The Minutes of the Board of Trustees for the past six months were read. W. Ralph Higgenbothom has been elected an associate member, and William R. Thompson a resident member, of the College, by the Board.

The Annual Commencement of the School of Pharmacy, was held at the Musical Fund Hall, on the 13th inst., when the following gentlemen received the degree of Graduate in Pharmacy at the hands of the President.

NAME.	RESIDENCE.	SUBJECT OF THESIS.
William M. Allen,	Philadelphia, Pennsylvania,	Eupatorium Perfoliatum.
Henry Blithe,	Montgomery, "	Chemistry.
Albert P. Brown,	Philadelphia, "	Matico.
W. G. Buchanan,	" "	Relative amounts of Extract in Commercial Aloes.
Edward D. Chipman,	Frankford, "	Baptisia Tinctoria.
Charles D. Collom,	Philadelphia, "	Cornus Florida.
William H. Cooper,	Greensboro, Maryland,	Cytisus Scoparius.
Robert W. Dickson,	Philadelphia, Pennsylvania,	Agathotes Chirayta.
C. Lewis Diehl,	Chicago, Illinois,	Salvia Officinalis.
Edward T. Dobbins,	Philadelphia, Pennsylvania,	Anthemis Nobilis.
Marcus C. Fetter,	Bethlehem, "	Asparagus Officinalis.
Theophilus Fisher,	Philadelphia, "	
Richard T. Hand,	Cape May, New Jersey,	Phytolacca Decandra.
George Hansell,	Rancocas, "	Iodinium.
Molton E. Hornbeck,	Allentown, Pennsylvania,	Lactucarium.
Henry H. Jacobs,	Philadelphia, "	Root of Panax Quinquefolium.
Henry W. Leslie,	Bristol, "	Fluid Extract of the Bark of Pomegranate Root.
Adolph W. Miller,	Saint Paul, Minnesota,	Anemone Ludoviciana.
Wesley W. Mullen,	Philadelphia, Pennsylvania,	Rubus Villosus.
William H. Naulty,	" "	Chemistry and Drugs.
George R. Parry,	" "	Gillenia Trifoliata.
H. T. Peck,	" "	Mensel's Salt.
T. A. Rex,	" "	Ferri Subcarbonas.
Christian Schmidt,	Baltimore, Maryland,	Saponification.
Theodore A. St. Clair,	Philadelphia, Pennsylvania,	Radix Galangal Minoris.
Jacob Sennett,	" "	Chimaphila Umbellata.
Richard M. Shoemaker,	" "	Arnica Montana.
Bennet L. Smedley,	Delaware Co., "	Baptisiæ Tinctoriæ Radix.
George M. Smyser,	York, "	Ptelea Trifoliata.
Clayton N. Wills,	Rancocas, New Jersey,	Relative quantities of oil in the long and short leaf Buchus.
David L. Witmer,	Philadelphia, Pennsylvania,	Helianthemum Canadense.

The Report of the Committee appointed at the Semi-Annual Meeting to obtain and forward specimens of our indigenous materia medica to the International Exhibition in London, was read and accepted, and ordered to be published. See Appendix, page 277.

A full report from the Committee appointed at the recent special meeting of the Board of Trustees, to confer with the Committee of Ways and Means of the House of Representatives at Washington, upon the provisions of the "Bill to provide internal revenue to support the government and pay the interest on the public debt," was received and ordered to be engrossed for publication in the Journal. See Appendix, page 280.

The Committee of the Board of Trustees in charge of the College Cabinet of specimens of materia medica, chemicals, &c., made a communication with reference to the extension of this important collection, and especially to adding a chemical section to the Museum of the College; it was referred for publication in the Journal. See Appendix, page 284.

The following Report, and also the Statement of the Treasurer of the Committee, were read and accepted.

The Publishing Committee Report, that during the past year the "Journal" has been regularly issued to subscribers without reduction of size. Owing to causes which had not been fully developed at our last Annual Report, the subscription list was suddenly cut short several hundred copies, by the cessation of the mail connections with the Southern States, and since then the general depression of business in other portions of the Union has materially interfered with the continuance of the patronage of many who feel it needful to decrease their expenses.

The natural result was, first, that the finances of the Journal fell behindhand, and from an overflowing treasury, yielding occasional aid to other branches of the operations of the College, it was on the 1st of April, 1861, in debt to the Treasurer $229.40. Since then, the causes before alluded to operating with increased force, the committee determined to resort to retrenchment of expenses for the year commencing January 1, 1862: 1st by cutting down the number of copies printed; and 2d, by reducing the Editorial expenses. Meanwhile the Treasurer, by urging the attention of those in arrears, and agents of the Journal, has increased the collections; and, on the whole, the finances are in a more favorable condition than at last report.

Respectfully submitted,
C. Ellis,
W. Procter, Jr.
A. B. Taylor,
Edward Parrish,
John M. Maisch,
} *Committee.*

The Committee on Latin Labels made their Annual Report, accompanied by an exhibit of the state of the funds at this date, showing a cash balance now in their hands, and an unsold stock of labels. As the stock of bronzed labels is small, it is proposed to publish a new edition the current year.

The Committee on Sinking Fund reported, that owing to the difficulties of the times they have not thought it expedient to make any further payment the past year toward the liquidation of the mortgage on the College Hall. They report a balance in hand of $74.13, which on motion of S. F. Troth is directed to be appropriated as follows: towards the Library Committee for purchase of books and binding of periodicals $50; toward the Committee on Cabinet $24.13.

On motion of Charles Bullock,

It being very desirable that the College Cabinet should be placed in as perfect a condition as our means will permit, in order to serve the purposes of our flourishing School of Pharmacy, therefore

Resolved, That an *annual* appropriation of $20 be placed at the disposal of the Committee on Cabinet for the furtherance of that important purpose.

A communication was received from J. Henry Abbott, stating that he is no longer engaged in the drug and apothecary business, and desiring to resign his membership in the College. On motion it was accepted.

On motion of Edward Parrish, it was unanimously *Resolved*, That the American Pharmaceutical Association is hereby invited to hold the annual meeting of the current year in this city; that the use of the Hall of the College is hereby tendered for its meetings; and that in the event of this invitation being accepted, the Board of Trustees is requested to make such arrangements as may be required.

The annual election was now ordered, W. J. Jenks and S. S. Bunting acting as tellers. They reported the following duly elected:

President, ...	Charles Ellis.
1st Vice-President, ...	Samuel F. Troth.
2d Vice-President, ...	Dillwyn Parrish.
Treasurer, ...	Ambrose Smith.
Recording Secretary, . . .	Edward Parrish.
Corresponding Secretary. . .	William Procter, Jr.

Trustees.

Dr. R. Bridges,	D. S. Jones,
J. C. Savery,	T. Morris Perot,
T. S. Wiegand,	S. S. Bunting,
S. N. James,	J. T. Shinn.

Publishing Committee.

Charles Ellis,	W. Procter, Jr.
Edward Parrish,	A. B. Taylor,

John M. Maisch.

Committee on Sinking Fund.

S. F. Troth, Ambrose Smith, E. Parrish.

Delegates to the American Pharmaceutical Association.

Samuel F. Troth,	Elias Durand,
Daniel B. Smith,	Edward Parrish,

James T. Shinn,

Then on motion adjourned.

EDWARD PARRISH, *Secretary.*

SUPPLEMENT
TO THE
MINUTES OF THE PHILADELPHIA COLLEGE OF PHARMACY.

MARCH 31, 1862.

Report of the Committee on the World's Fair Deposit.

To the College:—

The Committee consisting of Charles Ellis, Thomas P. James, Prof. R. Bridges, Prof. Thomas, Prof. Procter, F. L. John, Alfred B. Taylor, J. M. Maisch, T. S. Wiegand, James T. Shinn, W. Evans, Jr., Charles Bullock, W. C. Bakes, W. R. Warner, John E. Carter, and the undersigned, appointed at the Semi-annual Meeting, in September last, to obtain and forward specimens of our indigenous materia medica, &c., to the International Exhibition to be held in London, during the current year,—

Report, that they met soon after their appointment, and by adjournments on ten different occasions, till the afternoon of the 26th ult., when they adjourned *sine die*. Wm. C. Bakes served the committee efficiently as Secretary and Treasurer, and received its thanks at the close of his labors.

Through the liberality of the New England Glass Company we obtained the use of a remarkably fine selection of their superior ware, embracing all the necessary bottles for displaying the specimens, on favorable terms.

An ample list of our indigenous and a few important naturalized medicinal plants being prepared, an experienced herbalist was engaged to collect such of them growing in the vicinity as the lateness of the season would allow; others were purchased of dealers in this city, a few were contributed by William S. Merrill, of Cincinnati, and a large number by members of the Committee; making in all a collection of 148 specimens of the vegetable materia medica. These being collected, carefully dried, and garbled at the College, were mounted and appropriately labelled, each with its botanical name and one or more synonyms.

This agreeable and instructive labor was performed by several members of the Committee with great care to avoid errors and to display the distinctive characteristics of each specimen. By the use of half-gallon bottles of different shapes, some plants were retained almost entire, and whenever practicable, leaves and seed vessels accompanied specimens of the other parts of plants.

Through the kindness of Frederick L. John, of the College, we have been furnished with an extensive Herbarium of American Plants, which is designed to accompany the Cabinet of Specimens.

An incidental advantage secured by this undertaking is a large increase of the College Cabinet from specimens collected by this Committee.

The Committee of revision engaged upon the new edition of the National Pharmacopœia, responded to our request for such of the new officinal formulæ as would best illustrate the peculiarities of American Pharmacy,

by furnishing us with all that had been fully determined upon, which were considered sufficiently novel or characteristic. These were allotted to a sub-committee—Messrs. Shinn, Parrish, Bullock, Taylor, Wiegand, Warner and Scattergood, who accordingly produced samples of 48 pharmaceutical products, preparedby the formulæ about to be made officinal; these embraced 21 fluid extracts, a class of preparations peculiar to our Pharmacopœia.

The preparations were neatly put up and labelled uniformly with the materia medica specimens for exhibition, thus making the whole cabinet number about 200 specimens.

Owing to the angry discussions and ill feeling, growing out of the "Trent affair," threatening a rupture between our government and that of Great Britain, the legislation required to provide for sending specimens to the exhibition was defeated in the House of Representatives, so that hundreds of our citizens were doubtless discouraged from any attempt to display the products of their skill, and it became necessary for us to provide for the expenses of freight and transhipment, for the erection of the necessary shelving and for the supervision of the specimens while on exhibition. For these, and other expenses pertaining to the undertaking, of which a statement accompanies this report, the necessary appropriation was made by the Board of Trustees from the funds of the College. It is our intention to offer the specimens for sale at the close of the Exhibition, so as to refund the expenses thus incurred.

While your Committee regret that the unfavorable season of the year prevented their obtaining some interesting and valuable specimens, they feel that it is cause of congratulation, that so fair a collection of American plants is placed within reach of European pharmacologists.

Respectfully submitted,

EDWARD PARRISH, Chairman.

List of Specimens in the collection deposited by the Philadelphia College of Pharmacy, in the Industrial Exhibition of all Nations, London, 1862.

IN HALF GALLON SALT MOUTH BOTTLES.

Aralia Nudicaulis—root.
Chenopodium Anthelminticum—herb.
Chelone Glabra—herb.
Cimicifuga Racemosa—root.
Celastrus Scandens—fruit.
Comptonia Asplenifolium—leaves.
Dracontium Fœtidum—root and fruit.
Euonymus Atropurpureus—leaves and fruit.
Eupatorium Perfoliatum—herb.
Gillenia Trifoliata—root.
Hamamelis Virginica—bark leaves &c.
Hedeoma Pulegioides—herb.
Hypericum Perforatum—herb.
Ilex Opaca—leaves.
Lobelia Inflata—herb.
Lobelia Syphilitica—herb.
Monarda Punctata—herb.
Magnolia Glauca—bark and leaves.
Menispermum Canadense—root and leaves.
Nicotiana Tabacum—leaves.
Orobanche Virginiana—plant.
Ricinus Communis—leaves.
Solidago Odora—herb.
Thuja Occidentalis—leaves.
Triosteum Perfoliatum—herb.
" " root.
Tephrosia Virginiana—root.
Xanthoxylum Clava Herculis—bark.

IN QUART SALT MOUTH BOTTLES.

Asclepias Incarnata—plant.
Asclepias Tuberosa—root.
Asclepias Syriaca—root and fruit.
Aristolochia Serpentaria—root
Aristolochia Reticulata—root.
Apocynum Cannabinum—root.
Apocynum Androsæmifolium—root.
Adiantum Pedatum—herb.
Ambrosia Trifida—leaves.
Aralia Racemosa—root.
Asarum Canadense—root.
Anagallis Arvensis—plant.
Achillea Millefolium—herb.
Baptisia Tinctoria—root.
Betula Lenta—bark.
Benzoin Odoriferum—bark
" " leaves and fruit.
Cornus Florida—bark.
Caulophyllum Thalictroides—plant.
" " root.
Ceanothus Americanus—root.
" " leaves.
Convolvulus Panduratus—root.
Cicuta Maculata—root and leaves.
Cerasus Serotina—bark.
Cassia Marilandica—leaves.
Cephalanthus Occidentalis—bark.
Chimaphila Maculata—leaves.
Chimaphila Umbellata—leaves.
Cunila Mariana—herb.
Coptis Trifolia—root.
Dioscorea Villosa—root.
Datura Stramonium—leaves.
" " root.
Diervilla Canadense—herb.
Diospyros Virginiana—bark.
Erigeron Philadelphicum—herb.
Erigeron Canadense—herb.
Euphorbia Hypericifolia—herb.
Epigea Repens—plant.
Frasera Walteri—root.
Geranium Maculatum—root.
Gossypium Herbaceum—root.
Gillenia Stipulacea—root.
Gaultheria procumbens—herb.
Gnaphalium Margaritaceum—herb.
Hydrastis Canadensis—root.
Helianthemum Corymbosum—herb.
Helianthemum Canadense—herb.
Hydrangea Arborescens—root.
Hepatica Triloba—herb.
Iris Versicolor—root.
Juniperus Virginiana—tops.
Juglans Cinerea—bark of root.
Juglans Nigra—bark.
Kalmia Latifolia—leaves.
Liriodendron Tulipifera—bark.
Liquidambar Styraciflua—bark.
Leontodon Taraxacum—root.
Mitchella Repens—herb.
Nepeta Cataria—herb.
Nymphæa Odorata—herb.
Osmorrhiza Longistylis—root.
Polytrichum Juniperum—plant.
Phytolacca Decandra—root.
" " berries.
Podophyllum Peltatum—root.
Panax Quinquefolium—root.
Populus Tremuloides—bark.
Polygala Senega—root.
Ptelea Trifoliata—leaves and fruit.
Polygonum Punctatum—herb.
Quercus Alba—leaves and bark.
Rhus Glabrum—fruit.
Rhus Radicans—root, leaves and seed.
Robinia Pseudoacacia—bark.
Ranunculus Bulbosus—root and herb.
Smilax Sarsaparilla—root.
Scutellaria Lateriflora—herb.
Sassafras Officinale—pith.
" " bark.
Stillingia Sylvatica—root.
Sanguinaria Canadensis—root.
Sabbatia Angularis—herb.
Sesamum Orientale—leaves.
Trillium Pendulum—root.
Veratrum Viride—rhizome.
Xanthorrhiza Apiifolia.—root.
Ulmus fulva—bark.

Not inclosed.

IN PINT AND HALF PINT SALT MOUTH BOTTLES.

Arum Triphyllum—corm.
Aralia Spinosa—bark.
Alnus Serrulata—bark.
Cypripedium Pubescens—root.
Corydalis Formosa—root.
Cornus Sericea—bark.
Collinsonia Canadensis—root.
Cantharis Vittata.
Datura Stramonium—seeds.
Daucus Carota—seeds.
Euonymus Atropurpureus—bark.
Gaultheria Procumbens—fruit.
Gossypium Herbaceum—seed.
Helonias Dioica—root.
Helianthus Annuus—seed.
Lappa Minor—seed.
Lobelia Inflata—seed.
Myrica Cerifera—bark.
Polygonum Acre—herb.
Prinos Verticillatus—bark.
Punica Granatum—bark of root.
Populus Balsamea—buds.
Pinus Strobus—bark.
Sesamum Orientale—seed.
Viburnum Oxycoccus—bark.
Verbena Hastata—flowering tops.
Xanthoxylum Fraxineum—bark.
Xanthoxylum Fraxineum—fruit.

PREPARATIONS.

IN TINCT. BOTTLES.

Acetum Lobeliæ.
" Sanguinariæ.
Ext. Buchu Fluidum.
" Cimicifugæ, Fl.
" Colchici Sem. Fl.
" " Rad., Fl.
" Dulcamaræ Fluid.
" Ergotæ Fluidum.
" Gentianæ Fluid.
" Hyoscyami, Fl.
" Ipecacuanhæ, Fl.
" Lupulinæ Fluid.
" Rhei Fluidum.
" Sarsaparillæ Fluid.
" Sarsaparillæ Comp. Fl.
" Spigeliæ Fluidum.
" Sennæ Fluidum.
" Serpentariæ, Fl.
" Taraxaci, Fl.
" Valerianæ, Fl.
" Veratri Viride, Fl.
" Pruni Virginianæ, Fl.
" Zingiberis Fluid.
Cerat. Cantharidis Extracti.
Ceratum Sabinæ.
Emplastrum Arnicæ.
Emplast. Picis Canadensis.
Extractum Arnicæ.
" Senegæ.
Ferri et Ammon Sulphas.
" " " Tartras.
Glycerina.
Liquor Ferri Citratis.
" Guttæ Perchæ Chloroformic.
Oleum Lini.
" Ricini.
" Terebinthinæ
" Morrhuæ.
" Sesami
" Chenopodii.
" Erigeronis.
" Gaultheriæ.
" Menthæ Piperitæ.
" " Viridis
" Monardæ.
" Sassafras.
Resina Jalapæ.
" Podophylli.

REPORT ON THE INTERNAL REVENUE LAW.

To the Philadelphia College of Pharmacy:

The undersigned who, though appointed at a Special Meeting of the Board of Trustees, were directed to report to the Annual Meeting of the College, recently proceeded to Washington under instructions from the Board, to confer with the Committee of Ways and Means of the House of Representatives in relation to the "Bill to provide internal revenue to support the government and pay interest on the public debt."

Our objections against the Bill related chiefly to *Section* 101 and *Schedule C*, which are as follows:

Sec. 101. *And be it further enacted*, That, on and after the date on which this act shall take effect, no person or persons, firms, companies, or corporations, shall utter or vend drugs, medicines, preparations, compositions, articles, or things upon which a duty is imposed by this act, as enumerated and mentioned in Schedule C, without affixing thereto an adhesive stamp or label denoting the duty before mentioned, and in default thereof shall incur a penalty of ten dollars: *Provided*, That nothing herein contained shall apply to any medicinal drug sold entire and without mixture or composition with any other drug, fluid, essence, spirit, or other form or denomination of medicine or drug, nor to medicines compounded according to the forms prescribed in the United States Pharmacopœia, Wood and Bache's Dispensatory, or any homœopathic or other professional text books now in use of like character, and not sold, offered for sale, or advertised under any other name, form, or guise than that under which they may be severally denominated and laid down in said Pharmacopœias and Dispensatories and text books, as aforesaid, nor to medicines sold to or for the use of any person which may be mixed and compounded according to the written recipe or prescription of any physician or surgeon practicing his profession in the vicinity where such medicine, so prescribed, shall

be compounded and sold, and specially for such person prescribing said medicine.

SCHEDULE C.

Medicines, for and upon every packet, box, bottle, pot, phial, or other enclosure, containing any drugs, herbs, pills, powders, tinctures, potions, cordials, bitters, anodynes, tonics, plasters, liniments, salves, ointments, drops, waters, essences, spirits, oils, or other preparation or composition whatsoever, used or applied, or to be used or applied, externally or internally, as medicines or medicaments, for the prevention, cure or relief of any disorder or complaint incident to or in anywise affecting the human or animal body; which shall be uttered or sold in the United, States where such packet, box, bottle, pot, phial, or other enclosure, with its contents, shall exceed at the retail price or value the sum of twenty five cents..... *Duty* 3 cts.

Where such packet, box, bottle, pot, phial, or other enclosure, with its contents shall exceed the retail price or value of twenty-five cents, and not exceed the retail price or value of fifty cents.....5 cts.

Where such packet, box, bottle, pot, phial, or other enclosure with its contents, shall exceed the retail price or value of fifty cents, and shall not exceed the retail price or value of one dollar.....10 cts.

Where such packet, box, bottle, pot, phial, or other enclosure, with its contents, shall exceed the retail price or value of one dollar, for each and every fifty cents, or fractional part thereof, over and above one dollar, as before mentioned, an additional.....5 cts.

SCHEDULE OF DRUGS, HERBS, PILLS, POWDERS, TINCTURES, POTIONS, CORDIALS, BITTERS, ANODYNES, TONICS, PLASTERS, SALVES, LINIMENTS, OINTMENTS, DROPS, WATERS, ESSENCES, SPIRITS, OILS, PREPARATIONS, AND COMPOSITIONS.

Aromatic snuff.
Balm of a thousand flowers.
Balm of life.
Balsam of wild cherry and Iceland moss.
Balsam of liverwort.
Badger's cod liver oil
Brandreth's pills.
British oil.
Bull's sarsaparilla.
Burnett's cocoaine.
Cathartic pills,
Catarrh snuff.
Cough syrup.
Cough remedy.
Croup syrup.
Dentifrice.
Epileptic pills.
Essence of life.
Eye water.
Family pills.
Female pills.
Glycerine lotion.
Hair restorative.
Hostetter's bitters.
Hyperion fluid.
Hair dye.
Magic liniment.
Old Dr. Jacob Townsend's sarsaparilla.
Oxygenated bitters.
Pain-killer.
Pulmonary balsam.
Pulmonic syrup.
Pectoral balsam.
Pulmonic wafers.
Railroad pills.
Ready relief.
Richardson's bitters.
Russia salve.
Scheidam schnapps.
Sherry wine bitters.
Sugar-coated pills.
Tonic mixture.
Tooth powder.
Vegetable pulmonary balsam.
Vermifuge.
Worm lozenges.

Or by whatsoever other name the same heretofore have been, now are, or shall hereafter be called, known or distinguished; and also all pills, powders, lozenges, tinctures, potions, cordials, bitters, tonics, alteratives, anodynes, pomades, liniments, embrocations, electuaries, plasters, unguents, salves, ointments, drops, panaceas, lotions, oils, spirits, medicated herbs and waters, chemical and officinal preparations whatsoever, of other or the same, or the like properties, qualities, virtues, efficacies, and pretensions with the articles before mentioned, named, enumerated, or specified in this schedule, or any of them made, prepared, uttered, vended, or exposed to sale by any person or persons whatsoever, wherein the person making or preparing the same, has, or claims to have, any occult secret or art for the making or preparing the same, has, or claims to have, any exclusive right or title to the making or preparing the same, or which have at any time heretofore been, now are, or

shall hereafter be prepared, uttered, vended, or exposed to sale under the authority of any letters patent, or which have at any time heretofore been, now are, or shall hereafter be, by any public notice or advertisement, or by any written or printed papers or handbills, or by any labels or words written, printed or affixed to, or delivered with any such packet, box, bottle, or phial, or other enclosure aforesaid, held out or recommended to the public by the makers, venders, or proprietors thereof, as nostrums, or proprietary medicines, or as specific, or as beneficial to the prevention, cure, or relief of any distemper, malady, ailment, disorders or complaint incident to or in anywise affecting the human or animal body.

It will be observed that besides the great superfluity of words in the schedule, it enumerates some articles as taxable which it was the evident design of Section 101 to exempt from any tax. Section 101 was also considered objectionable as limiting the preparations exempted from the tax to such as are compounded according to the forms prescribed in the U. S. Pharmacopœia, Wood & Bache's Dispensatory, or any homœopathic or other professional text books now in use of like character, thus drawing a distinction to the disadvantage of the numerous new remedies, the manufacturers of which, from their recent introduction, or from the neglect of the compilers of these books to include them in their formulæ, would necessarily either pay the stamp duty, or be liable to the charge of illegally avoiding it.

An error also occurs in the phraseology of Section 101, which, while the obvious intention of the law is to exempt all prescriptions regularly issued by physicians, excepts only such as "shall be compounded and sold *for* such person so prescribing said medicines." Of course this mistake needed only to be pointed out to be corrected.

The following proposed substitutions were submitted to the Committee and received with approval, though the final result can not be reached until this portion of the bill comes before the Committee of the Whole, and will then be only determined subject to the ultimate action of the House, and subsequently of the Senate and Executive:

Substitute in Sec. 101, the following, after the word *provided*.

That nothing herein contained shall apply to any uncompounded medicinal drug or chemical, nor to any medicine compounded according to the United States or other National Pharmacopœia, nor of which the full and proper formula is published in either of the Dispensatories, Formularies or Text Books in common use among Physicians and Apothecaries, including Homœopathic and Eclectic, or in any Pharmaceutical Journal now issued by any Incorporated College of Pharmacy; and not sold or offered for sale, or advertised under any other name, form or guise than that under which they may be severally denominated and laid down in said Pharmacopœias, Dispensatories, Text Books or Journals as aforesaid, nor to medicines sold to or for the use of any person which may be mixed and compounded specially for said person, according to the written receipt or prescription of any Physician or Surgeon, (nor to perfumery and cosmetics, prepared by Apothecaries and sold by them to consumers at retail.)

In schedule C, we propose to insert the following after the title—

Medicines or *Preparations*, made, prepared, uttered, vended, or exposed for sale by any person or persons whatsoever, wherein the person making or preparing the same has, or claims to have, any private formula, or occult secret or art for

the making or preparing the same, or has or claims to have any exclusive right or title to the making or preparing the same, or which are prepared, uttered, vended, or exposed for sale under any letters patent, or held out or recommended to the public by the makers, vendors, or proprietors thereof as proprietary medicines, or as remedies or specifics for any disease, diseases or affections whatever, affecting the human or animal body, as follows:

Here follows the specification of the amount of duty in each case, given after the heading Schedule C., on page 281.

After which the remainder of the schedule beginning with a list of certain medicines, &c.. may be omitted.

The subject of taxing perfumery and toilet articles being under discussion in the Committee, we were consulted in regard to the rates best suited to this form of preparation, and in view of their comparative costliness to the manufacturer, unhesitatingly recommended a lower rate of taxes than that contained in the schedule of proprietory medicines.

The distinction proper to be observed between apparatus for the recovery of alcohol which has been previously used in manufacturing, and stills used directly in the manufacture of spirits was also pointed out to the Committee, and a clause protecting the former from the heavy license indicated in the bill was presented for the acceptance of the Committee.

The clause levying an additional tax upon spirits redistilled, mixed, adulterated, or prepared to be sold as brandy, gin, wine, &c., was amended by striking out the word *redistilled*, so that alcohol for use in the arts, having once paid the excise duty of 15 cents per gallon for proof, &c., is not subjected to further taxation.

Whatever may be the final action of Congress upon these subjects we shall feel that the College has done its part to protect the interests of legitimate pharmacy and its collateral branches.

The Committee were assisted by our fellow member, Thomas P. James, who accompanied us as the representative of the *Drug Exchange*, of this city, and was specially charged with the subject of the tax on redistilled spirits, last referred to, and the subject of licenses as applied to the sale of spirits, and of snuff and segars by druggists in executing orders from retailers in the country.

We refer with satisfaction to the respectful attention given to all the suggestions presented by us, as representatives of this College, and to the urbane deportment manifested towards us by the distinguished members of this important Committee.

Respectfully submitted,

EDWARD PARRISH,
CHARLES BULLOCK.

NOTE.—Since the date of this Report, the Bill to which it refers has passed through the Committee of the Whole, been reported to the House and adopted. The modification of Schedule C., proposed by us has been adopted with a separate paragraph fixing a stamp tax on perfumery.

The rate of taxation on proprietary and secret medicines has been reduced as follows:—On articles retailing at 25 cents or under, 1 cent; exceeding 25, and not exceeding 50 cents, 2 cents; exceeding 50 cents and not exceeding 75 cents, 3 cents; exceeding 75 and not exceeding $1.00, 4 cents; and in like proportion for those retailing for more than one dollar. The rates for perfumery, cosmetics, hair preparations, &c., are the same. The stamps to be affixed by the manufacturer, and to be cancelled by the retailer at the time of selling, under heavy penalties.

Section 101 has been adopted nearly as proposed by us, the last two lines (enclosed in brackets on page 282) having been omitted.

The clause affixing an additional duty on spirits mixed or rectified for sale as drinks, has been modified by omitting the word *re-distilled*, as suggested in the report, so that alcohol for use in the arts, or in Pharmacy, escapes any further duty than the original fifteen cents a gallon for proof affixed, equally on all forms of distilled spirit. The rates have been increased on all sold as brandy, rum, gin, or wine, to thirty cents a gallon on the basis of first proof, and so in proportion for any greater strength. The exception asked by the Committee, in favor of stills used for the recovery of alcohol, as mentioned in the report, though not inserted in the bill in the House, has, we believe, been recommended to the Senate Committee, who now have the whole subject under consideration. E. P.

REPORT ON THE CABINET OF THE COLLEGE.

To the Philadelphia College of Pharmacy.

The undersigned, a Committee of the Board of Trustees on the Cabinets of the College, are aware that in their official capacity they have no direct relation with the College in its annual meeting, yet as members feeling an interest in this hitherto much neglected branch of our operations, they take the liberty to offer the following statement for the information of the members generally, hoping through its means to elicit more interest towards the now respectable collection of specimens which form the nucleus of our Pharmaceutical museum. In 1851, an appropriation was made for the commencement of a cabinet of materia medica specimens, so far as to provide cases and glassware. By contributions from the members, the bottles were filled with specimens, and the collection was greatly increased in 1852, by a valuable contribution of East Indian drugs, by Dr. Royle, from those in possession of the East India Company, after the great Exhibition at London in 1851. In the spring of 185 , this collection was much injured, and most of the India specimens destroyed by a fire which occurred at that time, and since then little has been done to restore it, until the past winter. The College, by a previous appropriation of sixty dollars supplied several cases with glassware, and chiefly through the personal exertions of Professor Thomas, a large number

of these have been filled, with valuable specimens from his own cabinet. The residue of specimens obtained for the collection just sent to Europe were used, and others were the gifts of various members of the College. Contributions have been received or promised, from T. M. Perot & Co., Chas. Ellis & Co., T. P. James, Bullock & Crenshaw, John and T. Cramer, Edward Parrish, Dr. Bridges, and W. Procter, Jr. It is now proposed, in addition to the materia medica, to commence a collection of materia chemica, on such a basis as will enable the Committee, should their efforts be successful, to obtain for the College Cabinet a series of specimens that will add greatly to its value as a museum. The promotion of this last object is one which should interest the graduates of the College, and it is suggested to this now extensive body of pharmaceutists, that they keep in remembrance the museum of their Alma Mater, as from time to time chemical and other specimens come into their possession. We would also invite the aid of our manufacturing chemists for this object by such contributions of chemical specimens as they may feel disposed to make.

The Committee before closing would suggest, where members have rare and valuable specimens, which, for special reasons, they decline to part with, that they simply *deposit* them in the museum during their own pleasure, each of such specimens being labelled, to indicate its temporary ownership by the College, with the name of the depositor.

W. Procter Jr.,
R. Bridges,
Ambrose Smith.

AMERICAN PHARMACEUTICAL ASSOCIATION.

NOTICE.

The adjourned meeting of the Association, which was to have been held last year at St. Louis, and postponed in consequence of the disturbed condition of the country, will be held at the City of Philadelphia, on Wednesday the 27th of August next, at 3 o'clock, P. M.

It is most earnestly recommended to *all* the members to keep in view the important interests of the Association—to the several Committees, and especially those members and others appointed at the meeting held at New York, in 1860, to whom was referred the investigation of special subjects, to be ready to make their reports at the coming session of the Association.

The objects of the Association and the conditions of membership are explained in the *first and second articles* of the Constitution as published in the Proceedings of 1860, and in the several Pharmaceutical Journals.

H. T. Kirsted, *President.*

New York, April 12th, 1862.

Editorial Department.

THE AMERICAN PHARMACEUTICAL ASSOCIATION.—By reference to page 285 our readers will find the official announcement of President Kiersted of the meeting of this body, to be held in August next. Now that this important preliminary is settled, the Chairman of the Executive Committee earnestly requests all those members who have written reports on scientific subjects to make, to begin early and secure to the meeting a full contribution of interesting papers, and to use such care in copy as will in great measure prevent errors of the press, and save the editor a vast amount of trouble and annoyance. From the Special Committees, interesting reports may be looked for on Adulterations and Poisons. The large Committee to promote the St. Louis meeting, of course find their occupation gone, but they may direct their forces towards Philadelphia. Dr. Squibb, Chairman of the Business Committee, will, doubtless, as usual, be found wide awake when the time for action arrives.

REVISION OF THE FRENCH CODEX.—In the early part of 1861, The Society of Pharmacy of Paris instituted a discussion of various classes of preparations in the Codex, with a view to the probable revision of that work; and already the subjects of mineral waters and syrups have occupied many pages of the Journal de Pharmacie. During this period the necessity of a new edition of the Codex having been brought to the notice of the proper authorities, according to the Law of the 11th year of the Republic, viz. the minister of Agriculture, Commerce and Public Works, E. Rouher, and the minister of Public Instruction, M. Rouland; these officers made a report to the Emperor, on the subject, giving the reasons why a revision should be carried out, which report was approved by the Emperor at Fontainbleau, June 20, 1861. In accordance with that Report, a decree was issued on the 11th of December, directing—1st, that a special Commission be made by the Minister of Public Instruction, who should at once engage in the revision of the Codex of 1837; and 2d, that the Commission should consist of M. DUMAS, as *President*, and Professors Grisolle, Regnault, Tardieu, and Wurtz of the *Faculty of Medicine*, and Professors Bussy, Chatin, Guibourt, and Lecanu, of the *superior School of Pharmacy*; together with MM. Petit and Mourier of the Bureau, of Public Instruction, the latter to act as Secretary.

By a decree issued on the following day, MM. Robinet, Boudet and Gobley, of the Imperial Academy of Medicine, and MM. Mayet and Mialhe, pharmaciens of Paris, were added to the Commission. On the 22d of January, M. Dumas addressed a letter to the President of the Society of Pharmacy, inviting them to submit the result of their labor to the Commission. And on the 5th of February, M. Poggiale, President of the Society of Pharmacy, was also added to the Committee.

The Minutes of the discussions of the Society, are published in the *Journal de Pharmacie*, for January, February, and March, for the present year, and are full of interest.

The Cavendish Society.—The annual meeting of this Society, was held at Burlington House, London, March 1st, Thomas Graham, Esq., President in the Chair. The report of the Council was read by the Secretary, of which we give the following abridgment:

The operations of the Society are limited to the completion of Gmelin's Chemistry. They regret that, owing to the delay in bringing out the German edition, the Translator has not had material for the completion of the 15th volume, until quite recently, although promised six months ago. He is now progressing as rapidly as possible. The last part of the German edition promises a completion of the work the present year. If so, the Society hope to finish the English translation in the 16th volume, and then get out a general index of the whole, which will occupy another volume, and make the work complete.

The Council announce *the republication of the first volume of Gmelin*, which has been out of print, so that persons who have incomplete sets may thus render them perfect.

The financial condition of the Society is considered satisfactory; there are no outstanding debts, and a balance in hand of £375 15*s*. American subscribers will therefore be aware that the 15th volume will hardly be forthcoming before the Autumn, and meanwhile they should have their subscriptions for 1861 paid.

New York College of Pharmacy.—From the Druggists' Circular, we are informed that this Institution has revived its energies during the past winter, not only in its school of Pharmacy, but in regard to the membership. Among the new features is that of *Monthly Conversational Meetings*, where scientific and professional subjects are discussed in a pleasant informal manner, like our own "Pharmaceutical Meetings." At the last meeting of the College, the degree of Graduate in Pharmacy was conferred on A. W. Weissmann, Jr., and George J. Waugh, after which the annual election occurred, which resulted in the election of H. T. Kiersted *President*, John Milhau, John Meakim, and John Carle, Jr., *Vice-Presidents*, T. T. Green *Treasurer*, P. W. Bedford *Secretary*, and nine *Trustees*. They also elected Messrs. J. Milhau, John Meakim, J. W. Shedden, P. W. Bedford, and W. Wright, Jr., as delegates to the next meeting of the *American Pharmaceutical Association*.

Massachusetts College of Pharmacy.—At a meeting of this Institution held recently in Boston, Thomas Hollis was elected President; Charles A. Tufts and Charles T. Carney, Vice-Presidents; Henry W. Lincoln, Recording Secretary; James S. Melvin, Corresponding Secretary; Ashel

Boyden, Treasurer; Samuel M. Colcord, Auditor; Daniel Henchman, and others, Trustees.

The Graduating Class of 1862.—It is with pleasure that we chronicle an incident of the Commencement evening of the Philadelphia College of Pharmacy, March 13th, 1862. Just before the Professors, Trustees and Graduates elect left the room below the Musical Fund Hall, where the ceremony was to take place, George M. Smyser in the name of the Graduates of 1862, presented a portrait of Prof. Samuel Jackson, of the University, the oldest living ex-Professor of our School of Pharmacy, to the College, for the Museum of the Institution. The gift was received by Prof. Robert Bridges, Chairman of the Board of Trustees. The speaking on the occasion, though necessarily brief, was exceedingly appropriate, and marked with excellent feeling. We are informed that this is the first of a series of portraits with which, annually, it is intended to adorn the wall of our Museum.

The Tax Bill.—Those readers of this Journal who feel interested in the proceedings of Congress, relative to the tax bill, in its bearing on the sale of medicines, are referred to the report of a Committee of the Trustees of the Philadelphia College of Pharmacy, at page 280.

Journal and Transactions of the Maryland College of Pharmacy.—The April number of this Journal announces its suspension for the present, owing to pecuniary reasons. We regret this necessity believing that no Pharmaceutical Journal has ever raised its voice in favor of the right in our profession with greater consistency and soundness. When the political troubles which now afflict our country have terminated, and peace restores to their usual channels the numerous useful enterprises which war has suspended, we believe that our Baltimore friends will again speak forth in their own organ with an increased energy and a more brilliant fruitfulness.

The Pharmacopœia Weights and Measures.—The Committee of Revision have decided on retaining the use of Troy weight in the Pharmacopœia, but have discarded the use of the terms *scruple*, *drachm* and *pound*. This has been done to avoid the difficulty arising from substituting the avoirdupois pound of 16 ounces for the Troy pound of 12 ounces. When any quantity less than half an ounce is directed, it is to be expressed in grains, but the final result adopted may differ from this arrangement. The Chairman of the Committee, Dr. Franklin Bache, is now engaged in the tedious and laborious duty of preparing the manuscript for the printer, that its language may present a homogeneous character throughout.

Notice.—The continuation of Rochleder's Analysis, and several book notices, are in type, but have been crowded out by the College Reports.